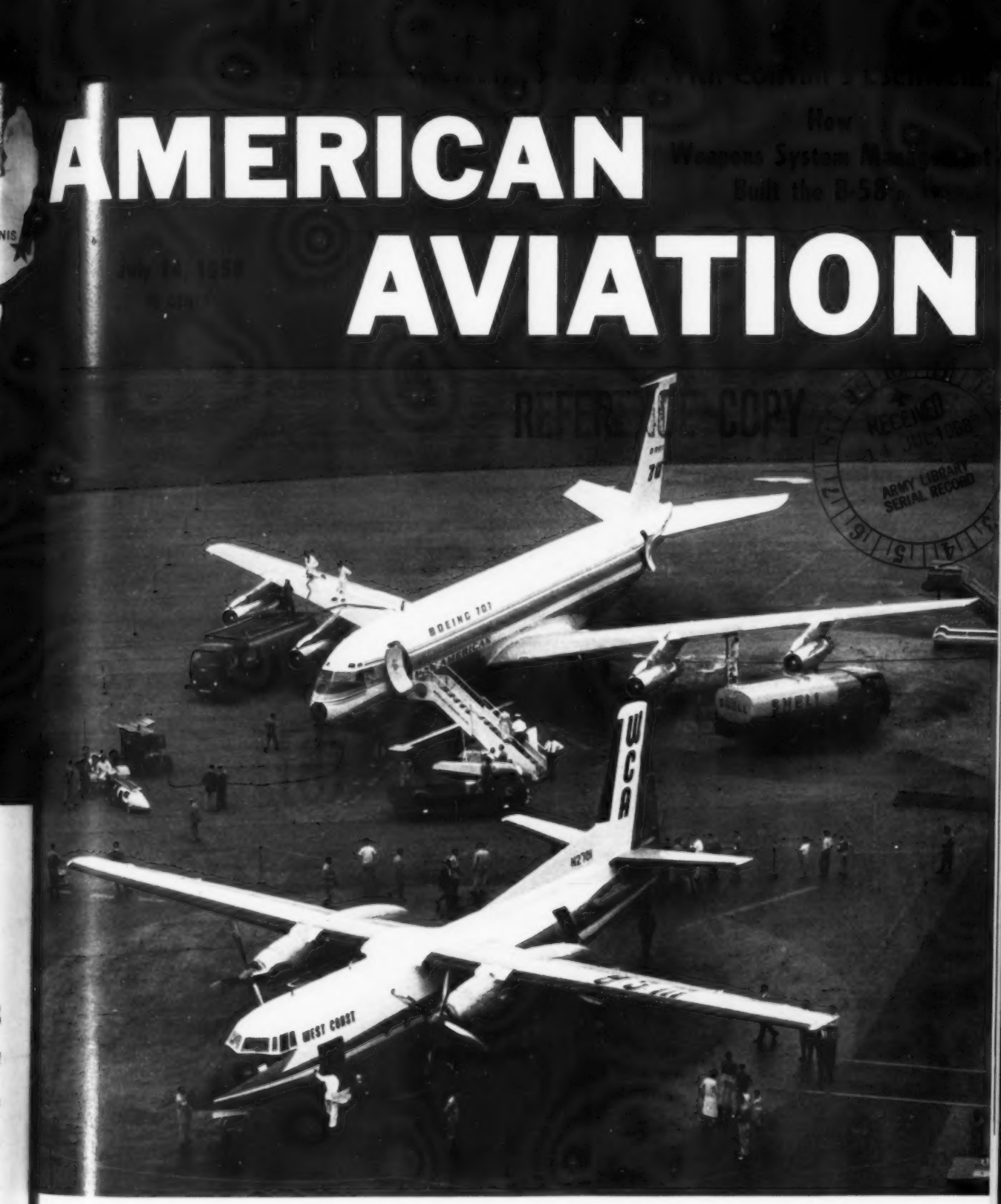
AMERICAN AVIATION



REFERENCE COPY
RECEIVED
JUL 1958
ARMY LIBRARY
SERIAL RECORD

THE LONG AND SHORT OF IT—A new age of first-class luxury jetliner air travel is dawning—on short-haul local airlines as well as on long-range trunk lines. The Fairchild F-27 propjetliner, already in delivery, will speed passengers to Main Street, U.S.A., and trunk city destinations in quiet, first-class comfort. The F-27 and the 707 teamed recently to preview the new era of all-the-way luxury class Jet Age travel. The 707 carried top-ranking government officials to Baltimore from Oklahoma City and the F-27 flew the group to Washington, D. C. Total distance: 1300 miles; time: approximately 2 hours.
FAIRCHILD ENGINE & AIRPLANE CORPORATION, Hagerstown 15, Maryland.

WASHINGTON/LEGISLATIVE An American Aviation and Aviation Daily Staff Report

ating perfection, and, *during the last 23 years, more scheduled revenue airline miles in the United States have*

LUBRICANTS AND FUELS FOR THE AVIATION INDUSTRY

Circle No. 112 on Reader Service Card.

Helping Hand for the Navy's Air Arm — Kaman HU2K-1

The most delicate job in the free world is entrusted to the men of the United States Navy. They must demonstrate to those who would extend the iron curtain that we have not mothballed preparedness. They must also teach the kids in the shadow of the iron curtain that fists clenched in defiance can also hold a baseball. Much of this assignment falls to Naval Aviation which maintains an endless global vigil, yet stands ready to rescue and evacuate injured. On these important missions Kaman utility helicopters extend a helping hand to the Navy's Air Arm.

THE KAMAN AIRCRAFT CORPORATION • BLOOMFIELD, CONNECTICUT

PIONEERS IN TURBINE POWERED HELICOPTERS

FAIRCHILD ENGINE & AIRPLANE CORPORATION,
Hagerstown 15, Maryland.

AIRTRENDS

Edited by Charles Schaeffer

Prospect is bright for even fatter 1959 appropriations. When conferees are through thrashing out variations in House and Senate versions of the $38-billion bill, the aircraft procurement account will probably be healthier. But Senators face a dilemma. Appeals for $2 billion more than House allotted, including nearly $1 billion for B-52s and support tankers, have been dropped in their laps. There's general agreement that it all won't be voted.

Outlook: possible compromise bomber-tanker increase, though less than proposed new full wing; partial restoration of House-slashed spare parts money and possible reinstatement of House-cut funds for utility jets.

Airline industry watchdogs unearthed no sticklers in the final draft of legislation to create a Federal Aviation Agency. Bill, which amends and re-enacts the Air Commerce and Civil Aeronautics Acts, was put under the microscope for a reading of the small print. Once the House Commerce Committee amalgamates or weeds a host of appeals for additions and subtractions, the FAA measure should move quickly.

Senators may try to clip MATS' fiscal wings this trip. Lawmakers' threats and breast-beating have not arrested MATS' inroads into commercial air business, asserts Senate fiscal leaders. Pressure's mounting to curb the military airline and complainants are getting a sympathetic hearing from Chairman Dennis Chavez (D-N.M.) of the Military Appropriations Subcommittee. Possibility is for a no-escape clause rider on the appropriations bill. Sen. A. S. Mike Monroney (D-Okla.), for one, was prepared last week to seek a clause that would require MATS to expend its funds on a 40/20 basis of passenger-freight awards to commercial carriers.

Meanwhile, a committee report being prepared on MATS is not likely to be as strong as the recent blast from the Holifield group in the lower House. At least one of Monroney's staff has said that the Holifield report "went overboard," ignoring essential MATS' functions.

But an audit of MATS by the General Accounting Office, due later this year, is not likely to be flattering. The study has been recommended by the Holifield Government Operations Military Subcommittee, and close liaison has been maintained between the two groups.

Time now militates against bills to steer more military overhaul business toward private contractors. Latest move to limit government overhaul competition came from Maryland Republican Senator J. Glenn Beall. His bill would require military chiefs to award 60% of the Pentagon's repair business to commercial firms, calls for a nine-member temporary commission to probe overhaul picture. No action has been taken on similar House legislation to limit military overhaul activities.

House probers will press a compaign to extract the gobbledygook from certain Defense Department rules. High on the agenda of the Hebert Armed Services Investigations Subcommittee (which probed the airframe industry two years ago) is a study of "confusing and contradictory" procurement regulations.

But time is running out for any searching inquiry, unless Chairman F. Edward Hebert (D.-La.) can lure lawmakers back after the congressional recess. Moreover, the unit must formally terminate a "sweeping" probe of the aircraft engine industry that fell flat last year, also stir interest in a dust-gathering bill to change the rules of negotiated procurement—if anything is going to be done this year. Mounting government investment in private facilities is also worrying Hebert.

Any Senate attempt to force tougher spending-ceiling legislation on the House will run into trouble. H.R. 8002, designed to put the Defense Department and other Government agencies on a form of annual "accrued expenditures," was revived last week by the Senate Appropriations Committee. The House-passed bill is a watered-down version of Hoover Commission proposals to siphon back to the Treasury unspent balances. Under it, Congress would appropriate only money

to be spent in the year. An industry-opposed clause providing the old "contract authority" for the procurement of long lead-time items was dropped by the House but remains in a similar Senate-passed bill (S 434) being reconsidered.

Here's the situation: Backers of the tougher S 434 want to substitute it for H.R. 8002, say it won't require major changes of virtually sacrosanct Senate rules. Such a move will almost surely provoke the ire of House fiscal leaders who wanted no spending-ceiling bill, but finally settled for H.R. 8002, giving Appropriations Committees the flexibility to impose annual limits. House purse-string holders oppose "unwieldy" contract authority, say it will complicate bookkeeping. DOD and the Budget Bureau lean toward the House version.

Watch for closer scrutiny by Congress of defense contract labor clauses. Key senators, led by Styles Bridges (R-N.H.), a member of the Appropriations Committee, are irked by what they say is a lax military attitude toward soaring labor prices. Unless Pentagon contract writers try to curb unchallenged additions of labor wage boosts to weapons costs, Congress may write a new law, Bridges warns. Military argument: Pentagon meddling in private labor negotiations is touchy subject.

Alaskan statehood will nullify the President's final say-so over CAB decisions involving U.S.-Alaska and intra-Alaska carriers. That's the way it looks to airline lawyers, who've concluded the President's authority over international route cases would no longer apply to the new state. One big question: Will statehood clear the way for nonskeds to launch operations on major Alaska routes and evade CAB economic jurisdiction by adopting an intra-state tag?

Extension of the Renegotiation Act may be postponed until next January. Though not definite, reports circulate on Capitol Hill to this effect. Don't look for any real softening amendments in the House, particularly if Congress does tackle a hurry-up extension. Moves to amend the act will require debate and Congress is moving into the home stretch.

One feature of a liberalized extension bill by Rep. Cecil King (D-Calif.) may run straight into resistance in the Ways and Means Committee. This would compel an Appeals Court to develop its own new record of a renegotiation case—rather than lean on the Board's documentation, no matter how extensive. Note: King contends that the Act, rushed through as a temporary wartime emergency measure, lacks normal safeguards.

Defense contractors would benefit under multi-million-dollar insurance legislation currently getting attention in Congress. Bill would allow the Defense Department to insure contractors for a maximum $500 million. But there are limitations: Only contracts in plants doing "unusually hazardous" work would be eligible. Hearings on the measure, introduced by Chairman Carl Vinson (D-Ga.) of the Armed Services Committee, this week will develop need for action.

Despite big planned cash outlays for missiles next fiscal year, aircraft procurement will be down less than 1%. Top Air Force officials told the Senate Military Appropriations Subcommittee aircraft will get a 46% chunk of the procurement buck next year—off a fraction from 1958's 47% figure.

A renewed probe of CAB could become the anti-climax of the year after sensational disclosures turned up in the Goldfine-Sherman Adams case. Nevertheless, House regulatory agency investigators are quietly thumbing through mounds of CAB documents. Subcommittee lawyer Stephen Angland has moved into offices abandoned by the team of the ousted counsel Dr. Bernard Schwartz, is interviewing Board members. Authority of the subcommittee is good until January and Chairman Oren Harris (D-Ark.) has voiced intentions to re-examine CAB.

Continuing need for aerodynamic research will create problems for the new National Aeronautics and Space Agency, which will be built around the National Advisory Committee for Aeronautics. Since NACA has been pulling Air Force and Navy chestnuts out of the fire for a long time, it will have to expand to handle both its aeronautics and space duties.

The General Motors Matched Power Team of Allison Prop-Jet Engines and Aeroproducts Turbo-Propellers Brings Flight-Proved Jet-Age Power to Airlines of the World in The New Lockheed Electra

ELEVEN AIRLINES CHOOSE ALLISON PROP-JET POWER. The flexibility of Allison Prop-Jet power enables the Lockheed Electra to solve major problems facing the airline transportation industry—bringing jet-age speeds and comfort to medium- and short-range flights *economically*. These flights make up more than *90% of all air travel*. The Electra, with its four Allison Prop-Jet engines and Aeroproducts Turbo-propellers developing a total of 15,000 horsepower, can operate from existing airports *quietly* and *efficiently* under present air traffic control patterns. Electra purchases totaling $300,000,000 have been placed by 11 world airlines—a demonstration of their confidence in the ability of this luxurious airliner to fulfill its mission for air travelers everywhere.

ALLISON DIVISION OF GENERAL MOTORS, Indianapolis, Indiana

GM GENERAL MOTORS AIRCRAFT POWER

ALLISON PROP-JET POWER

This FLOW REGULATOR is simpler in design and lower in cost

This unit exceeds MIL-V-8566 specifications in both regulation accuracy and pressure drop, thus confirming the tradition, *You can expect more from Vinson.*

OPERATION

PRESSURE	PROOF	BURST
3000 psi	4500 psi	7500 psi

Media
Hydraulic fluids & fuels. Available in stainless steel for corrosive liquids.

AMBIENT RANGE
-65° to 275° F.

OTHER CHARACTERISTICS
In stainless steel body, up to 600° F. Contains no seals; can replace restrictor valves; unaffected by back pressure. Sizes: ½", ⅜" and ⅝" have interchangeable parts. Available in ⅛" up to ¾"; larger tube sizes to order. Any type port available.

Externally adjustable types available for laboratory use and system evaluation. Internal elements available for cartridge evaluation.

WHAT'S YOUR FLOW PROBLEM? Your inquiry will receive an immediate reply from engineers experienced in the specialized problems of flow control.

Expect more from **VINSON**

PRESSURE REGULATORS
RESERVOIRS • ACCUMULATORS

VALVES: RELIEF • SHUTTLE • RESTRICTOR • UNLOADER • SNIFFLE • SOLENOID • BUTTERFLY

TELEPHONES: ST 3-2750 — ST 3-2576

8044 WOODLEY, VAN NUYS, CALIFORNIA

Circle No. 7 on Reader Service Card.

AMERICAN AVIATION

JULY 14, 1958—VOL. 22 NO. 4

WORLD'S LARGEST AVIATION PUBLISHERS

Contents

AIRTRENDS AND NEWS SUMMARY

Washington/Legislative 3
Military/Manufacturing 15
Transport 49
Airports/Airways 61
Three-Minute News Summary 62

NEWS FEATURES

Esenwein Interview: The B-58 Story 19
ADMA Report: Turbines Trouble Suppliers 22
Idlewild Gets 'Taxi Radar' 22
Air News in Pictures 24

ENGINEERING

Napier Converts Convair's 340 28
Allison's 250-shp Turbine Competition Winner 29

ELECTRONICS

Lear's Goniometer: New Approach to ADF 31

PRODUCTION

Fiat Scores Comeback with F-86K 34

MATERIALS & EQUIPMENT

Helicopter Blade Tracker 38
Portable Radio Direction Finder 38
Mobile Passenger Ramp 38
Air Cargo Belt Loader 38
Refrigerator for Airliner Galleys 39
Pressure Ratio Control Valve 39
Battery for Low-Temp Operations 39

TRANSPORT

Eastern Faces Up to Downturn 53
International Air Cargo Has High Potential 54
New Look at Baggage Puzzle Needed .. 55

LABOR

What's Behind Airline Labor Strife 56

PEOPLE

Anderson Back at Capital 58
Ryan Names Habley to New Military Job 58

DEPARTMENTS

Personal View 9
Letters 12
When & Where 12
Technical Literature 41
Books 43
Airline Statistics 44
West Coast Talk 46
En Route 60

Regional Offices: New York City: 17 East 48th St., New York 17, N.Y., Robert Weston and Frederick W. Pratt, regional advertising managers. Phone: Plaza 3-1100. **West Coast:** 8943 Wilshire Boulevard, Beverly Hills, Calif., Fred S. Hunter, manager; John Ball Jr., regional advertising manager. Phone: Bradshaw 2-6561, and Crestview 6-6605. **Canada:** Allin Associates, 12 Richmond Street East, Toronto 1, Ontario. Phone: Empire 4-2001. Allin Associates, 1487 Mountain Street, Suite 4, Montreal, Quebec. **Chicago:** 139 N. Clark St., Chicago 2, Ill. Richard K. Helwig, regional advertising manager. Phone: Central 6-5804. **Detroit:** 201 Stephenson Bldg., Detroit 2, Mich. Phone: Trinity 5-2555. Kenneth J. Wells, regional advertising manager. **Cleveland:** 244 Vienna Bldg., 1422 Euclid Avenue, Cleveland 15, Ohio. Phone: Prospect 1-2420, Donald E. Murray, regional advertising manager. **Geneva:** American Aviation Publications, 10 Rue Grenus, Geneva, Switzerland. Anthony Vandyk, European director. **London:** The AAP Company, 17 Drayton Road, Boreham Wood, Hertfordshire, England. Phone: ELStree 2688. Cable Address: STEVAIR, London. **Paris:** Jean-Marie Riche, 11 Rue Condorcet, Paris (9e). Phone: TRU 15-39. Cable Address: NEWS-AIR PARIS.

Publishing Information: Published every other Monday by American Aviation Publications, Inc., Washington, D.C. Printed at The Telegraph Press, Harrisburg, Pa. Entered as Second Class Matter in Washington and Harrisburg.

Member, National Business Publications

WAYNE W. PARRISH, Editor and Publisher

HUGH A. DAY, Assistant Publisher
JOSEPH S. MURPHY, Executive Editor

ELIZABETH OSWALD, Defense
GEORGE HART, Technical
ROBERT BURKHARDT, Transport
DONALD J. FREDERICK, CAB
KEITH SAUNDERS, News Analysis
DeWITT BALLEW, Business News
FRED S. HUNTER, West Coast
ANTHONY VANDYK, International
SAM P. SAINT, Contributing Operations
BERNARD BROWN, Copy Editor
MARY L. MILLER, Rates and Tariffs
WILLIAM H. MARTIN, Art Director
JOHN WALEN, Production

JAMES C. BRETTMAN, Adv. Sales Mgr.

STANLEY C. JENSEN, Managing Editor
ERIC BRAMLEY, Chief News Editor

ALBERT W. BENTZ, Manufacturing-Military
CHARLES SCHAEFFER, Congress
MEL SOKOL, Airports
GERALD A. FITZGERALD, Airline Economics
WALLACE I. LONGSTRETH, Cargo
WILLIAM O'DONNELL, Business News
RICHARD van OSTEN, West Coast
JEAN-MARIE RICHE, Paris
SELIG ALTSCHUL, Contributing Financial
JEWELLE MAGARITY, Editorial Assistant
CLIFFORD ALLUM, Editorial Assistant
FRANK F. KOZELEK, Asst. Art Director
ARAX ODABASHIAN, Librarian

LEONARD A. EISERER, General Manager

Editorial and Business Offices: Lawrence L. Brettner, Circulation Director; Frank R. Williams, Circulation Fulfillment Manager; Louis Mangum, Readership Development Director; Ellen P. Coakley, Advertising Service Manager. 1001 Vermont Ave., N.W., Washington 5, D.C., U.S.A. Phone Sterling 3-5400. Cable: AMERAV.

Subscription Rates: For U.S. and Canada—$5.00 for 1 year; $8.00 for 2 years. Other countries—$7.00 for 1 year; $12.00 for 2 years. Subscription limited to aviation industry personnel.

Incorporates: Airports and Air Carriers; Aviation Equipment; The American Pilot; Aviation Sales & Services; U.S. Aviation; and American Airports. All rights to these names are reserved.

Change of Address: Send old address (exactly as it appears on mailing label on your copy of magazine) and new address, including zone number if any to American Aviation, 1001 Vermont Avenue, N.W., Washington 5, D.C. Allow two weeks for change.

WESTERN'S THRU CHAMPAGNE FLIGHTS®

THE WONDERFUL WAY TO MEXICO CITY

Saludos, amigos!

Welcome to your reserved seat on a fiesta air cruise to Mexico City—Western's incomparable Champagne Flight. You're off to a wonderful trip!

Here's your chilled glass of private stock champagne. Be our guest for a leisurely, full-course dinner—complete from appetizer to pastry cart—while you relax in real Mexican atmosphere. *Magnifico!*

Western's Champagne Flight combines Old World charm and New World luxury for the finest hours in the sky today. And you can enjoy through one-carrier service from all the West!

It's a real "fiesta flight"—on Western Airlines, the wonderful way to Mexico City!

Western's Champagne Flights are nonstop from Los Angeles—with thru connections from all the West. Call Western Airlines.

® "Champagne Flights"—a service originated by and trade-mark owned exclusively by Western Airlines.

From the KC-135 Crash—Half a Lesson?

As the first reports of the tragic takeoff crash of the record-seeking Air Force KC-135 came over the wires early on June 27, the immediate impact of the disaster was obscured by a feeling of deep personal loss.

Many among the press and National Aeronautic Association timing party aboard were close business associates or friends of the aviation and writing fraternities. And a crack jet crew headed by a man of the caliber of Brig. Gen. Donald W. Saunders, too, is a loss that we and our defense effort can ill afford.

Considering its toll of industry, press and Air Force talent alone, this accident ranks among the most serious yet suffered by U.S. aviation. This would have been the case had it happened in a piston transport such as the Douglas DC-6B or Lockheed Super Constellation. The fact that it involved the KC-135 jet tanker, the nearest article the military has to a jet transport, adds to its seriousness. And it raises a significant question.

What relation, if any, does it have to the upcoming operation of commercial jet transports in the U.S.? The Civil Aeronautics Administration and Civil Aeronautics Board have been invited by the USAF to participate as observers in the accident investigation in the hope of possibly uncovering an answer to this question.

Don't get us wrong about the KC-135 and its safety record. Of all USAF aircraft introduced into service in recent years, it has the best operational record. The accident was the first experienced by the Air Force with more than 100 aircraft already in its inventory. The best proof of the USAF's faith in the aircraft came only a day later when Gen. Curtiss LeMay personally manned one of the jet tankers non-stop from the U.S. to Brussels.

Top Air Force officials have been more cooperative with CAA and CAB on the KC-135 project from its inception than on any other aircraft program in our recollection. USAF is to be commended for this.

But we think the time has come to go a few steps further. If the USAF, the CAB and CAA can come up with any tangible evidence from this accident, the prospects of directly relating it to commercial operations are still hampered by one big shortcoming in our present way of doing business. We are still working under two different codes in the certification of what are essentially transport aircraft.

Take the KC-135. No one will deny that, in its prime mission of transporting large volumes of jet fuel for inflight refueling, this is a military aircraft. But neither can it be denied that this mission is one of transport, a fact proven conclusively by the similarity of the KC-135 to other civil and military jet transports.

Why then the two codes of certification? Why not put the responsibility for all transport certification in the hands of the federal authorities most experienced in the airworthiness regulation and approval of new transports. Today it would be the CAA, but the promise of early realization of a Federal Aviation Agency adds even more logic to the suggestion.

And there are even stronger arguments for such action than simply one of reaping direct commercial air safety benefit from military experience. Look at the record:

The Air Force itself, forced both by budget and manpower limitations is looking increasingly toward "off the shelf" procurement of smaller utility jets. In all cases, the manufacturers seeking this business simultaneously are asking civil approval of their models in order to tap a possible commercial market.

The USAF's pressing needs for manpower and administrative personnel to oversee more urgent and complex problems involving high-speed combat aircraft and missiles naturally are depleting its effort to monitor transport programs. It would be altogether in order for CAA to take on this role with a minimum of USAF and Navy effort spent in seeing that their special requirements are defined and met.

The urgent need for such action has been proven amply in Army experience. Army aviation has yet to take delivery of a satisfactory operational aircraft or helicopter built to the military handbook of specifications. By way of contrast, the only acceptable models it has brought into its inventory have been built initially to meet civil standards.

To the manufacturers, a single civil-military certification code would be an immeasurable relief. To the U.S. as a nation, it would provide the much-needed but elusive answer to the disposal of military transports once they have given way to more advanced types. The problems of certification of the C-82 and C-97 should be convincing enough to prove this point.

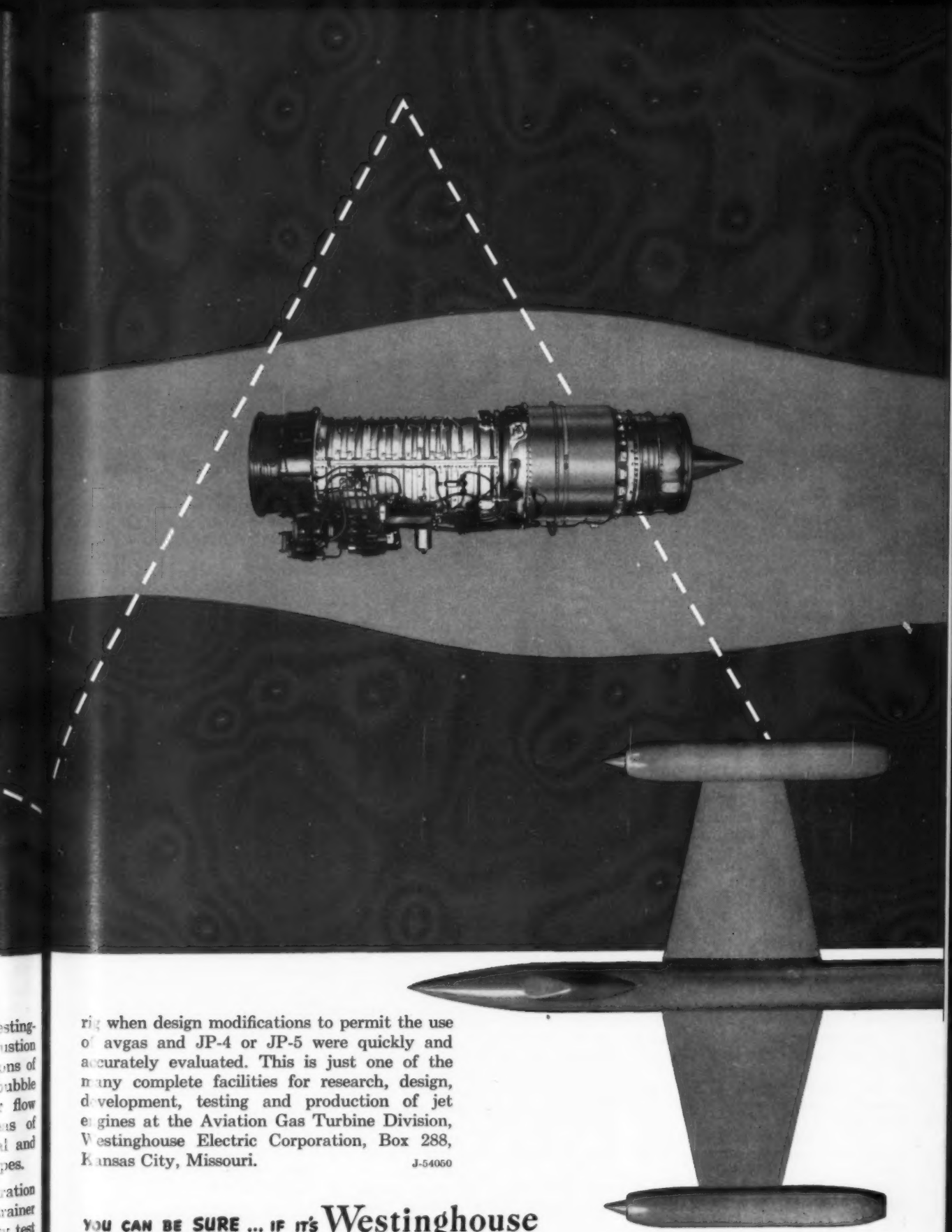
And last but not least this would be a much-needed step toward narrowing what is becoming an ever-widening breech between military and civil interests on transport matters. The health and might of our military logistics capability and that of our air transportation system are inseparable. What better way is there of keeping them that way than to unite them in the single purpose of fostering the best air transports in the world.

Joseph S. Murphy

Westinghouse proves jet combustion efficiency

This plastic combustor model enables Westinghouse engineers to predetermine combustion efficiencies in turbojet designs. Observations of the flow of the colored water and air bubble mixture permit visual evaluation of air flow patterns in normally unobservable areas of engines. This test method minimizes trial and error testing with handmade metal prototypes.

Development of the latest J34 configuration for use in North American Aviation's T2J trainer proved the value of this water flow analogy test



rig when design modifications to permit the use of avgas and JP-4 or JP-5 were quickly and accurately evaluated. This is just one of the many complete facilities for research, design, development, testing and production of jet engines at the Aviation Gas Turbine Division, Westinghouse Electric Corporation, Box 288, Kansas City, Missouri. J-54050

YOU CAN BE SURE ... IF IT'S Westinghouse

Circle No. 9 on Reader Service Card.

We're Wrong—34 Ain't Too Old

We were off base. In our editorial of June 2 "And So It Came to Pass—Again" we questioned why a 34-year-old pilot was joyriding with a friend in the T-33 that collided with a Capital Viscount, then added "By its own reckoning a 34-year-old is of no military use as a jet pilot."

We still have our reservations as to the national defense mission of that particular T-33 flight, but as to jet pilots and their acceptable age we were dead wrong. Our thoughts were based on the earlier position of the Surgeon General, but the experience of the Air Force in Korea changed all that.

The proof: read these letters to the editor.

If we take 1952 as the date to compute ages, since 1952 was the middle of the Korean War, and since I have only birth dates from which to work, we have the following jet aces 34 years of age or over:

Name	Age	EA Destroyed in Korea
Col. Royal Baker	34	13
Col. James K. Johnson	36	10
Lt. Col. Vermont Garrison	38	10
Col. George F. Jones	34	6.5
Capt. R. J. Love	35	6
Col. Harrison R. Thyng	34	5
Col. R. P. Baldwin	35	5

I am, of course, referring to your editorial, "Personal View" in your June 2nd issue.

You evidently did not check your facts, for here we have seven jet pilots 34 years of age or older who must be of some LITTLE military use, since the seven jet pilots personally destroyed 55.5 enemy aircraft. This does not take into account the fact that "since they are over the age limit for useful military jet flying" they were leaders who taught, led, and inspired the younger pilots **in the air.**

C. A. Brown
Cdr., USN

•

In the June 2 issue of U.S. News and World Report there was a feature story titled "I Saw the H-Bomb Power of the U.S." The article concerned itself with the training of one of SAC's top B-52 crews. The average age of this crew is 34.66—the oldest member 41, the youngest 24. The article stated that the average age of SAC crews is 35.

The authorized grade of a fighter squadron commander is Lieutenant Colonel.

There are very few Lt. Cols. serving as squadron commanders who are less than 34.

If you will pardon the personal reference, I am a Lt. Col. USAF, Age 41. I checked out in jets at 36, served as a squadron commander in Korea and Okinawa for 11 months and am now being reassigned to a TAC fighter bomber wing, after serving three years in AFROTC Program . . .

William A. Campbell
Lt. Col., USAF
Tuskegee Institute, Ala.

•

In regards to your rather reckless comments about 34 year old combat pilots, I want to say that as a younger jet pilot (age 26), I am constantly in awe of these "old timers" who consistently outshoot, outbomb, and outfly us younger pilots. In addition their accident rate is only a fraction of the younger pilots'. This might indicate that it is difficult to substitute for experience.

J. Mara
Los Angeles

•

To set the record straight, the average age of 40 pilots assigned as experimental test pilots here at the Air Force Flight Test Center is 34.025. These pilots daily fly all jet fighters ranging from the "hot" T-33 to the F-106 and jet bombers through the B-58. It should be noted that the T-33 is the "coldest" jet in the inventory at present. If the Air Force were to adopt your conclusion that 34-year-old jet pilots should be put out to pasture, the AFFTC, other ARDC test sites, and many tactical units would have to be disbanded immediately.

Individually, we would all prefer to be 25 years old again and I'm sure the Air Force would also prefer it. However, no one has yet determined how to keep a test pilot under 25 years of age while completing high school (18), completing college engineering (22-23), attending flying school (23-24), procuring the minimum 1,500 hours diversified flying time (28-30), attending the AF test pilot school (29-31), and procuring two years of flight test experience prior to being usable (31-33). Actually the average flying time of our pilots is 4,350 hours which is more indicative of the experience required than the 1,500 hour minimum for attending the test pilot school. Also, many have masters degrees in addition to undergraduate work, which is desirable. Most have flown a tour of combat which is also desirable.

If you possess some secret for stopping the clocks while the education and experience necessary to perform our mission is being obtained, we would be deeply grateful for the clue. In the meantime the Air Force will have to rely on us useless, over-age pilots to perform its testing and evaluation of new aircraft. The 25 year olds who must eventually fly these aircraft and the American public who are depending upon them for defense should be in a state of panic if we 34-year-old pilots are as incompetent as you suggest.

We have no quarrel with your basic concept that some system of preventing mid-air collisions is highly desirable. We are in the air a good portion of each day and have no desire to come in contact with airliners or anyone else unaware. However, your statement that a primary cause factor in the mid-air collision on May 20 was an over-age jet pilot is unjustified, untrue and unacceptable to the large number of competent, highly skilled and experienced Air Force jet pilots 34 years old and older.

Donald K. Slayton
Captain, USAF
Edwards AFB, Calif.

Correction: Salary of F. Kirk Johnson, Chm. bd., Central Airlines, (AMERICAN AVIATION, June 2, 1958 P. 43) should have been $2,250, no expenses.

When & Where

JULY

ATA Personnel Relations conference, Drake Hotel, Chicago, July 15-17.

Assn. of Local and Territorial Airlines, quarterly regional meeting, Denver, Colo., July 24-25.

Society of Photographic Instrumentation Engineers, annual symposium and exhiborama, Statler Hotel, Los Angeles, July 29-31.

Aeronautical Radio, Inc., Airline Electronics Engineering meeting, Cosmopolitan Hotel, Denver, Colo., July 30-31.

AUGUST

National Flying Farmers Assn., convention, Hotel New Yorker, New York City, Aug. 11-15.

Experimental Aircraft Assn., annual fly-in & convention, Milwaukee, Wis., Aug. 8-10.

Institute of Radio Engineers, western electronic show & convention, Ambassador Hotel, Los Angeles, Aug. 19-22.

MASS RETALIATION—USAF-Northrop Snark SM-62s, world's first and only *proven* intercontinental guided missiles, can reach any military target on earth from U.S. bases. No human crew is carried *and no defensive strategy yet conceived can stop the Snarks in mass attack!* With deadly accuracy—their hydrogen warheads can annihilate an aggressor's defenses, his airfields, his missile sites, his arsenals. They can open paths across an enemy's homelands for the crews of our manned bombers to follow, to attack, and return. Today, Snarks are being delivered to our Strategic Air Command, complementing SAC's powerful striking forces. The Snark—our *one* fully developed intercontinental guided missile—is in limited production. Its cost is but a fraction of that of any other intercontinental air weapon under present test or development. America and the free nations of the world need the full deterrent and retaliatory power of the Snark and they need it now.

DIVISIONS OF NORTHROP AIRCRAFT, INC.

NORTHROP

BEVERLY HILLS, CALIFORNIA, U. S. A.

CONVAIR 240

CONVAIR 340

METROPOLITAN 440

the

NEW CHALLENGER

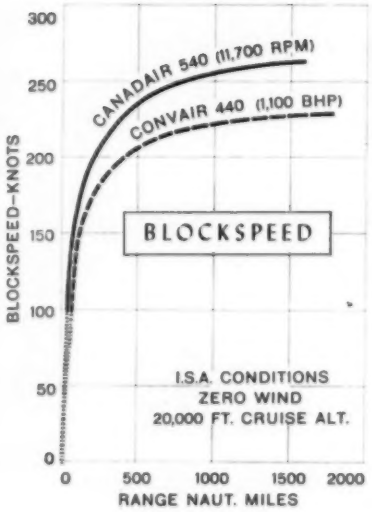
–Ahead in Blockspeed

–Ahead in Payload

and NOW-Canadair

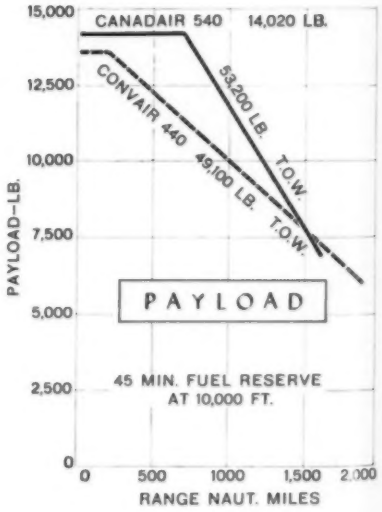
540 TURBO-PROP

For short-to-medium routes



Graph at left shows the significant improvement in speed available in the turbine-powered "540" compared with the "440"—as much as 34 knots at a range of 1000 nautical miles.

Graph at right shows that the earning potential of the "540" is greatly increased. It is capable of carrying 48 passengers, plus their baggage, plus 4210 lbs. of cargo (total payload: 14,020 lbs.) a distance of 680 nautical miles. This represents a payload increase of 365 lbs. over the "440", and a range increase of 500 nautical miles.



Furthermore, with its Napier Eland turbine power, the "540"s max gross weight is increased 4100 lbs. over the "440" (up to 53,200 lbs.) . . . and the "540" can reach cruising altitude of 20,000 ft. in half the time (15½ mins. vs. 35 mins.). The "540" builds on the well-known and excellent record of the "440", and is altogether a new airliner unsurpassed in performance characteristics and earning power.

C-L CANADAIR LIMITED

CANADAIR

Limited, Montreal, Canada

- **Aircraft**
- **Guided Missiles**
- **Research and Development**
- **Nuclear Engineering**

Canadair is a subsidiary of General Dynamics Corporation.

CA58-CL66-17/1ST

AIRTRENDS

Edited by Elizabeth Oswald and Albert Bentz

Question of whether to centralize or decentralize control over air research and development will be subject of lengthy debate both at the Pentagon and on Capitol Hill. This will be the inevitable consequence of the report of a special committee headed by H. Guyford Stever, former Air Force chief scientist, stressing long delays which stem from diffusion of authority and complicated funding policies presently governing R&D projects.

•

Major reorganization of ARDC may be a by-product of the Stever report. Proposal calls for deputy commanders to be responsible for each of the functional areas of research, technical development, weapon systems and testing.

Big fight is likely over finding of the committee that there is too much authority vested in the operational elements of the Air Force for determining requirements. Theory is that this should be basic responsibility of Deputy Chief of Staff (Development) with operations people acting in an advisory capacity.

UTX will be renamed the T-39 if funds lopped from the Air Force budget in fiscal 1959 are restored as a result of Senate and Conference action. Plans call for a first year buy of 10 "off-the-shelf."

Hughes Aircraft may use a sealed bid room in one of its divisions. Most prime contractors feel sealed bids are impractical in subcontracting because of necessity of evaluation. But some subcontractors believe it is the only way to eliminate favoritism.

Once the UCX goes into production the plans are to use the off-the-shelf utility jet for navigator and electronics countermeasure training and Airways and Air Communication Service airways monitor. Competing for the contract to build the highspeed aircraft are Lockheed and McDonnell. Decision on competition is overdue.

AF is about to order the new Vertol rotor blade with a steel D-shaped spar for operational use. The blade, which is interchangable, is said to have an almost limitless life and is only one of the blade developments by means of which the company hopes to substantially boost the speed of helicopters.

Product improvement for the little J85 GE engine is beginning to pay off already. However, the engine is expected to meet tough competition both from the Fairchild J83 and the Pratt & Whitney J52.

First procurement money for the B-70, chemical bomber now under development at North American Aviation, has been made available by the Air Force. Phase I development financing is expected to amount to about $15 million before the end of fiscal 1959. Initial contract provides $3.44 million.

Other aircraft included in the AF's $4.246-billion aircraft program for fiscal 1959 are the long-range, all-weather Mach 3 F-108 under development by North American; the B52G to be rolled out at Boeing-Wichita July 23; the Convair B-58 Hustler; the McDonnell F-101B, Voodoo; the Republic F-105 Thunderchief; the Convair F-106 Delta Dart; the big Douglas 133B transport designed to carry big missiles or troops; the Boeing KC-135 Stratotanker which is used basically as a refueler but which can alternately carry troops; the two utility planes, UCX and UTX, to be purchased off the shelf from as-yet-unannounced manufacturers; the Cessna T-37A jet trainer and the Northrop T-38. Only helicopter to be purchased for Air Force use is the Kaman H-43B.

In all, a total of 972 planes are to be purchased, as compared with 917 in fiscal 1958.

A major breakthrough for Vertol and General Electric is marked by the sale of 10 Model 107 twin-turboshaft helicopters to Army. It is Army's first purchase of GE T58-powered aircraft. Seven of the copters will have T58s, the others get Lycoming T53s. Letter contract (American Aviation, June 30) totals more than $8 million. Army designation is YHC-1 for the 15,550 lbs.-gross copter, which will accommodate 22 troops, commander and crew of two. Commercial version, expected by 1961,

will seat 25. Vertol recently broke into commercial market with sale of its 44B to New York Airways.

Army is disappointed with progress on its aerial platform (Jeep) program to date. Four companies are working on various types of VTOLs for the project, but Army sources say they haven't been able to get sufficient lift with present powerplants in corporated in the designs. One of the designs is known to have been off the ground in recent tests, however. The soldiers are banking on the Jeeps for tactical airlift.

It's a pretty good bet that Navy will try for new speed and altitude records with its Chance Vought F8U-3 Crusader. The Dash-3, which has a Pratt & Whitney J75 engine with afterburner that provides 23,500 lbs. thrust, will also get a 6,000-lbs.-thrust rocket for additional boost. With this combination, it is expected to attain at least Mach 2.2 and get up to 90,000 ft. First F8U-3 now is at Edwards AFB for tests.

Big future for 250-hp turboprop seems to stem from interest of lightplane builders, as well as the Army. One major manufacturer is expected to announce a turboprop twin designed around the Allison engine before the end of this year.

Wanted by Navy and Air Force is a dispersed-site fighter capable of operating from very short runways. Fiscal 1959 budget will support preliminary engineering phase of development.

A decision that all basic air research should be unclassified has resulted from new efforts to broaden the base of such projects. This means that security clearance is unnecessary for participation. Longer-term funding of non-profit research projects is in the works in an effort to bolster participation.

Watch for increasing Army pressure for Air Force to meet its logistics needs. A new aviation office is being set up in the Chief of Army Transportation department at the Pentagon. It will be manned by a logistics expert. Meanwhile, Army hasn't been very specific on what aircraft and helicopters it will buy with fiscal 1959 funds. But Pentagon sources list six possibilities: 260 copters in the categories of the Sikorsky H-37A, Bell HU-1A and Bell H-13, and the same number of fixed-wing aircraft. Latter are listed as Grumman Mohawk, DeHavilland Beaver and DeHavilland Otter.

Canadian decision on whether to build the CF-105 Avro all-weather fighter could depend on whether an agreement is reached with the United States on the erection of guided missile defenses against Russian bombers on Canadian soil. Answers won't be forthcoming for some months, and could also depend on effectiveness of Bomarc since Canada wants to knock out attacking bombers a long way from Canadian cities.

Marines are anxious to get strategic air lift, but won't rely on it until they have equipment that works. Gen. R. McC. Pate told the Senate Armed Services Committee that it was faster to move troops to Korea by ship, and that the entire all-service airlift presently could only lift 62,320 fully armed troops.

Product mix of manned aircraft and missiles will remain heavily weighted in favor of manned vehicles for the next 15 to 20 years, according to top AF thinking. Lt. Gen. C. S. Irvine, Deputy Chief of Staff (Development) is urging that the scientists and engineers get on with the job of making weapon systems now under development operational.

A drop of only one percent in aircraft procurement funds is now planned.

Look for further strengthening of Weapon System Project Offices as the Air Materiel Command moves to improve management of supply and maintenance to meet Congressional criticism and to eliminate roadblocks in communications which lengthen development cycles.

Battle for place in the procurement sun and increasing use of weapon system approach will inevitably lead to mergers with aircraft and engine companies likely to pick up where they can small, specialized companies in the electronic and research areas.

Alouette Sets Six New World Records

Farmingdale, L. I.—Among six records for rotary-wing aircraft established by the Alouette, a jet-powered helicopter, is a new world altitude figure of 36,501.125 feet. This is 6,201.125 feet higher than the one set in December 1957. Official confirmation is expected shortly from the Federation Aeronautique Internationale. The information was released here by Republic Aviation Corporation, who assembles and markets this five-place, French-designed craft in the United States and Canada.

All six records were set at the French Air Force Test Center, Bretigny, on June 13, a Republic spokesman stated. Included was a record for climbing to 31,267 feet with two passengers, topping the mark for helicopters in the 2,205-lb. to 3,858-lb. payload class.

The Alouette is not only setting new world records abroad, but in the U. S. it is establishing outstanding operational figures daily. One example is its performance for Aetna Helicopters, Inc., flying out of New Mexico for the U. S. Forestry Service. Within 30 days, one Alouette has . . . carried 54,623 lbs. of cargo, 214 passengers—made 246 flights—flown 97.51 hours with an amazing corrective maintenance figure of only 3 hours. Working at altitudes ranging from 7,000 to 10,000 feet every time, as many as 32 missions have been accomplished in one day of operation.*

The Alouette II, world's first production turbine-powered helicopter, represents a major stride forward in the field of rotary-wing aircraft. Its simplicity of design, instant take-off ability and ease of operation, plus rugged construction and quick adaptability, make the Alouette ideal for a wide range of applications heretofore considered outside helicopter capabilities.

For fulfillment of private, commercial and government helicopter requirements, the Alouette II offers extraordinary versatility, reliability, economy.

**Designed by Sud Aviation*

Contact Helicopter Division for literature and demonstration flight. EARLY DELIVERY.

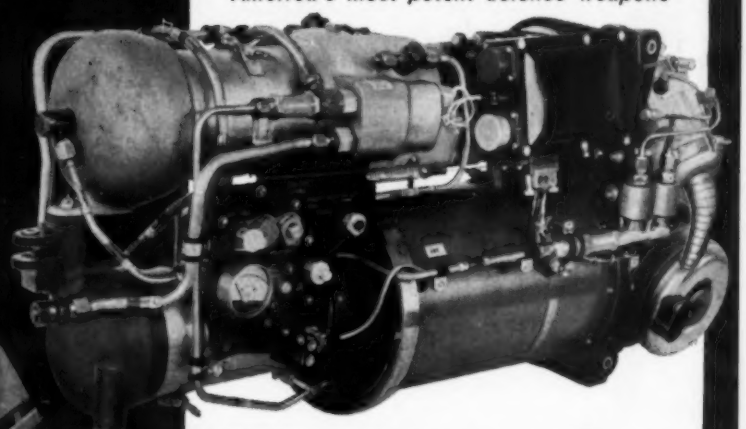
REPUBLIC AVIATION CORPORATION

HELICOPTER DIVISION

FARMINGDALE, LONG ISLAND, N. Y.

AUXILIARY POWER
for the U.S. Army's deadly
NIKE HERCULES

AiResearch units power the controls of America's most potent defense weapons



Key defense and population centers are now being ringed with batteries of Army Nike Hercules missiles to deter or destroy aggressors. *Supplying power for flight controls* is the AiResearch auxiliary power unit pictured above, now in production.

As a member of the Army-industry team producing the Nike Hercules (Army Ordnance, Western Electric-Bell Telephone Laboratories and Douglas Aircraft), AiResearch was chosen to design, develop and manufacture this vital accessory power source for the missile because of nearly two decades of experience in lightweight turbomachinery.

This experience includes applications utilizing solid propellants, liquid mono-propellants, bi-propellants, atomic power, cryogenic gases as well as gasoline and air. AiResearch's ability for high capacity production as well as in research and development, made it the logical choice.

Garrett's AiResearch divisions have also designed systems and components for 18 other missiles and rockets in the U.S. defense arsenal.

We invite your inquiries.

ENGINEERING REPRESENTATIVES: AIRSUPPLY AND AERO ENGINEERING, OFFICES IN MAJOR CITIES

THE GARRETT CORPORATION

AiResearch Manufacturing Divisions

Los Angeles 45, California • Phoenix, Arizona

Systems, Packages and Components for: AIRCRAFT, MISSILE, ELECTRONIC, NUCLEAR AND INDUSTRIAL APPLICATIONS

AMERICAN AVIATION

JULY 14, 1958—VOL. 22, NO. 4

WORLD'S LARGEST AVIATION PUBLISHERS

August C. Esenwein, vice-president and divisional manager of Fort Worth Div. of Convair, General Dynamics Corp. was interviewed at his Fort Worth office by Betty Oswald, AMERICAN AVIATION's Defense Editor.

Associated throughout his adult life with aircraft management, Mr. Esenwein long has been an advocate of single prime contracting to speed the development cycle. The system is currently under attack. The B-58 is the first aircraft built completely under this system.

Convair-Ft. Worth photos

"Beer and Pretzels . . . CFAE and GFAE"

Q. Can you define the prime weapons system contract manager concept as represented by the B-58?

A. There are a variety of ways in which weapons system management can be practiced. The particular form of systems management that has been practiced in connection with the B-58 might best be called single prime contracting. This means that the Air Force selected a single major contractor, delegated to him the responsibility for program management and awarded him a contract to do this. Thereafter, the single prime contractor held competitions to choose team members or subcontractors. Opportunity to make proposals was given each company in the business —that has competence for a particular article or subsystem. There would seem to be no other way, except through competition, of reaching into the depths of capability of this country's industrial complex.

Q. The B-58 was the first airplane that was developed completely under this system, was it not?

A. I'll give you a strange answer. Get the piece of paper that bought the original Wright flyer for the Signal Corps and look at it. It was a single prime contract. It contains virtually all of the provisions and requirements, targets and penalties and principles that are in the single prime contract that buys the B-58.

Q. But in the years in-between the Wright flyer and the B-58, has this particular form of contracting been used by the Air Force?

A. Not to the extent that it applies in the case of the B-58. I believe there was a circumstance wherein the Navy gave Martin a flying boat contract which was quite similar in extent and degree. As far as the Air Force is concerned, I think the B-58 program is the first time they ever went as far as they did on a single prime contract.

Q. On the basis of your experience with the B-58, is it necessary to make changes in this system?

A. I think the extant rules and regulations are adequate. In suggesting how the application of the single prime policy becomes most effective, I would say that the key lies in having a very strong project office within the Air Force—one which accomplishes aggressively that part of the partnership job which is required of the Air Force. There have been several agencies within the Air Force that have fought and backed away from an acceptance of single prime contracting, and the whole thing would look a lot better if the Air Force uniformly got behind making it work.

Q. A charge is frequently made that the Air Force has delegated its responsibility to the contractor and doesn't do its own job. You say that the weapons system project office of the Air Force has got to be made stronger. Is there any clear delineation of where the authority of one stops and the other begins?

A. The Air Force has at no time delegated any decision making authority to Convair in the case of the B-58. We always go to the Air Force with our recommendations and suggestions as to any particular situation and secure Air Force approval and decision. We, in effect, are agents of the Air Force. Our authority is limited always by the fact that the Air Force calls the final shot on any given situation. At no time, in the last five years that we have been operating under this system, have we found that the Air Force permits this decision making authority to come to us either by intent or by default.

This is one reason why I say that a strong project office is a requisite to the successful operation of this contract. The project office must be able to get quick decisions from the labs and other Air Force agencies and transmit these decisions to the contractor. If a project office is delinquent in processing such matters promptly and or gives equivocal decisions, then the whole situation degenerates and breaks down.

Q. Talking about these weapons system project offices, does a problem exist for the contractor because the project office for R & D is different from the AMC project office, so that there is no continuity of policy when a break comes and an item moves into production?

A. In the case of the B-58, the project office established by ARDC was an un-

usually good one. Some extremely competent officers and civilian personnel were assigned to this office. One of the principal reasons why I think that the B-58 program has succeeded so well to date has been the superb job done by the project office in supporting the program and seeing that the requisite decisions, funds and direction were forthcoming at the proper time.

Now I know that this was not always easy for the project office to do, and not all support or direction was entirely timely. But, on the whole, the B-58 is an outstanding example of what a strong office can do. Certainly, anything less than what occurred would have militated against the success of the program. I personally believe the success of the B-58 project office is attributable in considerable part to the characteristics and the personalities of the persons involved. A determined and dedicated man in uniform or similarly dedicated civilian employe can get a great deal accomplished within the bounds, scope, rules, regulations and systems as they exist—if he wants to.

Q. Well, have they not recently upgraded the weapons system project offices to give them more authority?

A. Yes, within AMC they are operating at a higher organizational level and closer to the front office, and presumably can get faster action and quicker decisions.

Q. This should help you?

A. Yes, this is extremely useful. As to the transition from ARDC executive management of a project office to the AMC management, we have yet to experience this. I believe that the switch is to be made in July. Since the beginning of this B-58 program, ARDC has managed it at the project office level. When the transition is made and when AMC comes into control, there will be some obvious adjustments, but none of great significance.

Q. Would it be simpler, for example, if ARDC and AMC sat side by each?

A. They do. AMC has had representation in the B-58 project office since its inception. It is simply a question of which of these two commands has executive responsibility and at what time in the program the responsibility switches from one to the other. Remember, that the B-58 program has been and still is essentially a research and development program and is just now about to enter into the production phase.

Q. Another charge is that this system freezes smaller companies out of the production pattern. Does it work this way?

A. Convair hasn't found this to be so. I have a few statistics here that I would like to give you. I'm sure that they will show you what has actually happened in this program. Let's look at figures covering people doing business direct with Convair—Ft. Worth. We have over 8,500 qualified companies on our approved vendor list. Of these, 1,900 are within the Fort Worth-Dallas area, 360 are within the State of Texas, and 6,240 of the 8,500 are in the other 47 states of the union. We are currently doing business with over 3,700 firms on this approved list. Of these, 940, or 25%, are classified as large business—that is, 500 employees or over. The remaining 2,802, or 75%, are small businesses.

Q. How much of the money goes out of Texas?

A. The biggest part of it goes out. But we have a statement of greater significance to small business. During 1957, they did 72 million dollars worth of business with us. Beyond this, Convair—Ft. Worth has 14 vendors of major sub-systems, such as the bomb-nav system, the fire control system, the ECM

(Electronic Counter Measures), and the cabin conditioning system. These 14 major vendors fan out their business to second- and third-tier sub-contractors comprising a total of 10,885 companies. Of these, 7,558, or 70%, are small businesses and 3,327, or 30%, are classified as large businesses.

As single prime contractor, all of the money, except for engines, passes into Convair's hands. Convair then, in obtaining all of the items for this program, spends the procurement dollar as follows: For major and minor subsystems, we spend 42 cents; for raw materials, 3 cents; for standard hardware, 1½ cents; for special hardware parts, 2½ cents; for outside manufacture of airframe pieces, 9 cents; for special testing equipment, 1 cent; for supplies, utilities, etc., 4 cents. This means that the design, development, engineering and manufacture of the airframe itself and the installation of CFAE—in-plant work, if you will—takes 37 cents out of each dollar.

Q. Does the Air Force require you and other contractors to subcontract a percentage of the contract or is this something that you decide yourself?

A. The amount of subcontracting is fairly well covered both by law and procurement regulations. You are familiar with the Small Business Act of 1953, which is binding on us obviously and particularly. There is also a general policy pertaining to the subcontracting to small business which is expressed in ASPR 1-707. Beyond this there are certain requirements which are set forth in Department of Defense Instruction 4100.20. All of these relate to the general necessity a prime contractor has towards supporting small business. Application of these policies and review of relevant statistics clearly show that small business gets a very major chunk of the B-58 dollar.

Q. There has been no hindrance to small business by having a single prime contractor?

A. On the contrary. In comparing the B-58 program statistics with the B-36 program statistics, we find that we're employing about twice as many vendors today as we ever did on the B-36.

Q. I have heard it said by Air Force people that the electronic situation has gotten so complicated you almost have to have another manager below the prime contractor to handle the electronics. Does this make sense or does this complicate the situation?

A. Statement number one, that you just made, is correct. Electronics has infiltrated into every aspect of weapons systems to such an extent that weapons systems are completely and absolutely dependent on these devices. To generalize as to whether one needs a submanager for the electronics portion of a given program is a little dangerous. The manner in which you organize the task of maintaining technical integration and coordination of your electronics gear with the airframe and propulsive system is a function of whatever weapon system you're talking about. The employment of particular management techniques varies widely with the

nature of a program and the phase through which the program is passing. A sub-manager might be advisable in one case, and highly inadvisable in another. In the early days of the B-58 program, we were very much tempted to establish a sub-manager for all of the subsystems requirements. Our experiences since tend to confirm that this step would have been unnecessarily complicating in this program.

Q. In other words, what you're saying really is that this should not be written into any set of regulations, but must be left flexible?

A. This is right. For example, take a single prime contractor who, having first run his state-of-the art studies and developed his sub-systems specifications and requirements, sets about having a competition among many vendors to find the best brains and competence for the task in hand. Until it is determined who the teammates are, it seems highly inadvisable to choose up captains and assign responsibility. How one organizes, I think, depends largely on the kind of team that is put together. Companies vary as much as individuals in strengths and weaknesses. So, I think you should lean back a little and wait until you see who's on the team before you decide exactly what degree of managerial responsibility to assign to each member.

Q. So you wouldn't be in favor of writing the subsystem manager into the procurement regulations at this time?

A. That is exactly right. Single prime contracting, as we practice it here at Ft. Worth, is a completely dynamic thing. The situations and conditions change rapidly from day to day, week to week and month to month. Trying to confine necessary activities in an iron corset of pre-formed concepts tends to destroy the very reason for single prime contracting which is to hire managerial judgment as well as competence. Once you have hired managerial judgment, you would be silly to write rules and regulations and set up base line which tend to eliminate it.

Q. It has been said that some of these new programs are so big that the industrial talent or management capability of any one company is too big to handle the whole job—you have to bring these pools or associated groups into it, each doing a segment of the program.

A. I think there is a matter of definition involved here. I have yet to hear it said that any of our major industrial firms do not have the requisite managerial competence. I think the conversation that you usually hear is that no one major company possesses the total scientific, technical and production capability for one of these larger programs. Managerial capability is one thing. Production engineering and scientific capacity are another.

Q. In your opinion is there any need for a change in the contracting system because of the size and complexity of some of the new and upcoming programs?

A. I really don't think so. The crux of the matter would seem to lie in the kind of management techniques and principles that might be employed. In looking at some of the more extensive and larger programs that are being contemplated and put in gear, several things are obvious. No one company in the industry today has the total and integrated capability to take on such a program by itself, under its own roof. It must rely on a vast complex of vendors or associates to get the job done.

This is also essentially true of many of our present and less magnitudinous programs today. It's something that has been going on for years. So, whether the job in hand be done by single prime contracting or whether several major contractors get together and elect a boss and associate themselves on a joint venture makes little difference, so long as one boss is in command of the situation, holds the purse strings and is completely responsible for the technical integration.

Q. Isn't the difference in the size of these new programs really a matter of degree?

A. This is true. Evolutionary process, legal and other compulsions have combined to prevent any one company from doing a whole job. Companies have been discouraged from having both propulsion and airframe competence under the same management. For example, the case book is full of instances of this sort in past decades. More recently the Air Force has been discouraging airframe companies from getting too deep into the electronics business. Now, under these circumstances, what we are looking at today is no different except, as you said, by a matter of degree from what has been normal and standard for the last 25 years in this business of ours. As programs increase in complexity and magnitude, nothing varies except the numbers of people of the various types of competence required for the job and the facilities required.

Q. How did the management of the B-58 differ from that of the B-36 as a result of the change of the manufacturing concept?

A. Simply in the amount of GFAE (government-furnished aeronautical equipment) that was furnished—versus the amount of CFAE (contractor-furnished aeronautical equipment) that was procured. As far as the B-58 is concerned, Convair's responsible for developing, procuring and providing all of the subsystems that go into this airplane, except for engines. In the case of the B-36, there was practically no CFAE (contractor-furnished aeronautical equipment) except a few actuators, harnesses, peculiar hardware items and the like. The bomb navigation system, the armament, all the major subsystems were furnished by the government. Essentially the difference is just a question of degree—how little is GFAE and how much is CFAE.

Q. What does this mean in terms of your performance on the B-36?

A. Simply that we had the responsibility, as a contractor, for delivering six completely operational aircraft per month, but lacked much of authority that single prime contracting provides. The story of late GFAE is an old and familiar one to all of us in the business. So is the job of maintaining coordination of the design and configuration of GFAE. There can be no question but that all of the multiple agencies within the Air Force concerned with furnishing GFAE are most conscientious and work hard to get the items to the right place at the right time. But—the beer and pretzels don't always come out even. When this happens it's costly in time and dollars.

Traditionally, the airframe contractor, who is responsible for delivery of the end article, becomes the whipping boy, and too often there is little he can do, if the article to be delivered is short

(Continued on page 22)

certain items of GFAE, except to announce the fact.

It is also true that today's more complex and compact weapons systems provide far less latitude for late installation of component items and equipments than did the roomy B-36. This again, in terms of cost and schedule.

So, to assure that all of the myriad parts and pieces arrive at the right time, at the right place, in proper sequence, that they match, fit and function, are of the proper design and configuration and integrate, is a monumental job in scheduling and control as well as engineering. It is not a job which can be done without centralized management and management controls. And such controls must be capable of short reaction times and sensitive to rapid rates of change, and new events. This is the heart of single prime contracting. One place where the total integrated score is kept. One place where incipient problems of all sorts can be recognized soon enough to insure preventive actions in time.

Suppliers worried

Big problem about jets airlines don't know needs

by Albert W. Bentz
Manufacturing/Military Editor

The switch to jets by the airlines and some corporate fleets is going to be a headache for aviation distributors and manufacturers. This was evident at the spring meeting of the Aviation Distributors and Manufacturers Assn. at Bretton Woods, N.H.

But these same suppliers are not worrying about a shift to turbine power in lighter aircraft at this time. "They're a long way down the road," said one member. On the other hand, the suppliers were warned that it is a good idea to plan now for the eventuality.

John Gillespie of Airwork Corp. sounded the ADMA members' concern over the approaching jet era. During the next three years, he said, the major domestic airlines will be through with reciprocating engines. And some businesses are looking toward turbines.

Big problem is that the airlines do not at this time know what their needs will be. But Gillespie warned that service facilities for the new equipment is a must. "And this means a phenomenal investment," he said, adding, "Jets are simple, but the cost of parts is fantastic. We've got to plan for new dollars as well as replacement parts."

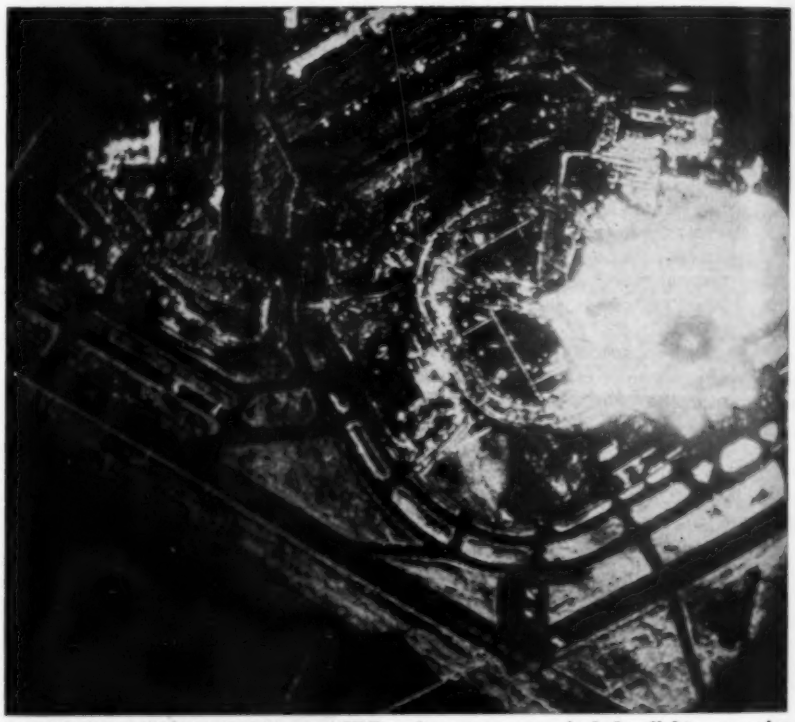
• **It pays to keep records**—Jack Craig of Pacific Airmotive said that employes of that overhaul base already have more than 60,000 hours training in J57 modification and overhaul and that a facility has been built to handle J75, J79 and Rolls-Royce Dart business.

"We keep a record of all our customers' new aircraft purchases and the equipment they carry," he said. This has paid off, since these airlines and businesses now depend on PAC for their inventory items, he added.

An encouraging note was sounded by Webster Crum of Lycoming, who commented that the reciprocating engine has not reached its full development "by a long way." He said newer engines are getting more horsepower per pound and considerably better reliability.

Crum predicted that there would be no turbines in light utility aircraft for at least five years. He pointed to the great cost of turbines compared to reciprocating engines—$50-60 per horsepower for turbines, against $13 for conventional engines.

ADMA presented Dwane Wallace, president of Cessna Aircraft Co., the President's Award for outstanding contributions to aviation. The fall meeting will be held in November at Dallas.



DETAILED PRESENTATION on ASDE radar scope even includes lights appearing as dots alongside runway. Series of planes on runway is one plane landing.

Idlewild Gets AMB's First 'Taxi Radar'

Radar with astonishing clarity of presentation has been put into operation at New York's Idlewild International Airport to permit monitoring by CAA controllers of ground traffic throughout the airport's 5,000 acres. Popularly known as "taxi radar", the new Air Surface Detection Equipment (ASDE) was developed and manufactured by the Airborne Instrument Laboratory division of Cutler-Hammer, Inc. for Air Force and the Airways Modernization Board.

Enclosed in an inflated polyethylene-coated dacron bag, ASDE's 4-ft.-high by 12-ft. wide dish antenna is mounted on top of the Idlewild control tower some 170 ft. above the ground. Rotating at 60 rpm, the antenna provides a picture of ground traffic movement continuously on a 16-in. scope. Runways, ramps and taxiways show up as dark ribbons with bright edges and aircraft, trucks, etc. are represented by bright spots.

ASDE shows separate blips for objects as little as 10 ft. apart in a straight line from the antenna, and it's possible for an experienced operator to distinguish between twin- and four-engine aircraft, AIL says.

This fine resolution results from the narrow (.25°) beam width used. However, to achieve this narrow beam, ASDE operates in the 24-kmc frequency range. Satisfactory performance of long-range radar operating at such high frequencies normally is subject to weather conditions but, because ASDE's range is limited to four miles, the "taxi radar" is said to be thoroughly reliable regardless of weather.

ROLLS-ROYCE DEVELOPMENTS

Air Cooled Turbine Blades in Service

The latest Rolls-Royce Avon turbo jet engines in squadron service have air cooled turbine blades. This feature permits the use of higher gas temperatures, giving an increase in thrust per pound of engine weight, without affecting blade life.

The proving of this advanced feature in squadron service has established its basic reliability and air cooled turbine blades will be incorporated in the later marks of Rolls-Royce turbo jets and prop-jets for civil air transport.

—another technical advance in

ROLLS-ROYCE

GAS TURBINES

ROLLS-ROYCE LIMITED, DERBY, ENGLAND

AERO ENGINES • MOTOR CARS • DIESEL AND GASOLINE ENGINES • ROCKET MOTORS • NUCLEAR PROPULSION

Circle No. 6 on Reader Service Card.

AIR NEWS IN PICTURES

Fire-Foiling Fountains

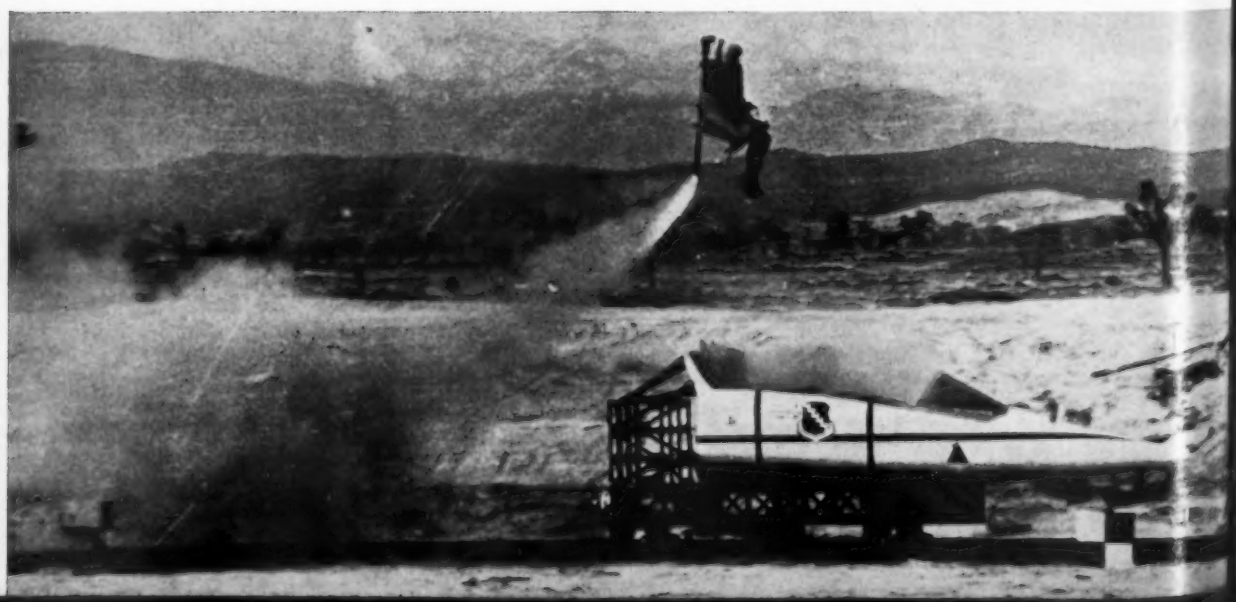
Water fog curtain, shown undergoing test operation at Boeing Airplane Co.'s Transport Div. at Renton, Wash. is one of five surrounding aircraft fueling positions there. Designed to prevent spread of fire and heat between parked aircraft in the event of an emergency, each curtain is 155 ft. long and consists of 32 alternate wide- and narrow-angle spray nozzles.

Douglas Aircraft Co. Photo

Here's a "100-Year-Old" DC-8

Douglas engineer turns skin-diver to inspect DC-8 fuselage during hydrostatic tests preceding first flight of the airplane. Tests, said to be equivalent to more than 100 years of service, involved more than 119,000 cycles consisting of pressurization, loading to simulate aerodynamic forces, depressurization and application of a 1.67G landing load. Program resulted in improved manufacturing technique including method of mounting windows.

North American Aviation, Inc. Photo



Boeing Airplane Co. Photo

Not From Mars

Chase pilots flying for North American Aviation, Columbus need no longer overtax their memories. Helmets are equipped with two converted 16mm gun cameras each containing 50 ft. of film and driven from the aircraft battery system. Cameras also have been used to record damage sustained in flight for use in the event of an unsuccessful emergency landing.

←

Rocketed-Man or Manned-Rocket?

A rocket-powered, low-level ejection seat designed by Northrop Aircraft, Inc. is undergoing tests at the Edwards AFB rocket track. Forward fuselage section of Company's T-38 supersonic trainer is used. Environment and ejection system of T-38's rear cockpit (from which dummy is being ejected) are same as those of single-seat fighter version being developed for NATO and SEATO countries as Northrop N-156F.

←

Northrop Aircraft Inc. Photo

For reservations, call your Travel Agent or any Continental ticket office.

ONLY CONTINENTAL FLIES THE
JET POWER VISCOUNT II

In flight, you *see* the difference immediately. And you *hear* and *feel* the difference, too. So quiet you can talk in whispers. So smooth you hardly know the 4 Rolls-Royce gas turbine engines are there. All this plus Continental's famed "Gold Carpet" service...including complimentary Golden Buffet Breakfasts, Golden Champagne Dinners and Luncheons. The Viscount II is custom-built for Continental by Vickers-Armstrongs Ltd. Radar, of course.

DAILY FLIGHTS BETWEEN
CHICAGO • LOS ANGELES
DENVER • KANSAS CITY
COLORADO SPRINGS

Another Continental exclusive—DC-7B Club Coach between Chicago, Los Angeles, Denver, Kansas City

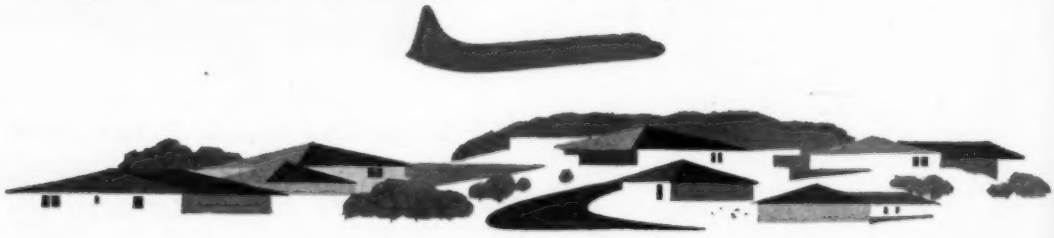
CONTINENTAL AIRLINES
FIRST IN THE WEST WITH JET-POWER FLIGHTS

Electra/Flight

"Good Neighbor" Jet Age Service Even to Smaller Communities

YOU'LL HEAR THE DIFFERENCE

A *"Good Neighbor,"* the 4-engine Electra is actually quieter than today's piston-powered transports during taxi, take-off and flight. Because the prop-jet Electra gets higher faster on climb-out, its presence is unobtrusive—the Electra truly is a good neighbor.



No Unnecessary "Weather-Ahead" Delays

Electra's 4 General Motors Allison Prop-jets give the "bite" necessary for safe, swift maneuverability even in small airport operations during adverse weather or low ceilings. The Electra's large fuel capacity enables it to fly, if necessary, to alternate airports as far as 860 miles distant and still retain 2 hours of reserve fuel.

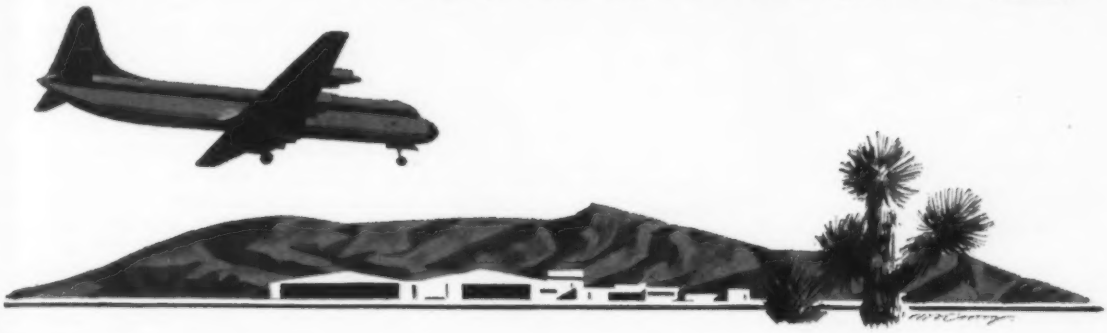
MINIMIZES MECHANICAL DELAYS

Electra uses plug-in system units such as fuel pumps, hydraulic check valves and electric relays...with many parts interchangeable. Packaged service centers are "man-height" with operating equipment displayed for easy access and quick checks and adjustment.

Optional self-contained starters and built-in stairs reduce ground equipment needs to a minimum. Air conditioning continues to function on the ground for passenger comfort.

fits more airports

Today's facilities at more than 1200 world airports are entirely adequate for Electra/Flight service today.



FITS TODAY'S TRAFFIC CONTROL SYSTEM

Control tower people like Electra because it fits into today's traffic control system... no radical approach or landing or take-off problems. Electra's fuel capacity enables it to "hold" for as long as 5½ hours. On "wave-offs" there is practically no "lag" between signal and maneuver.

SAVES TIME ON THE GROUND

Passengers can get on and off the Electra close to terminals at all airports. They can carry their baggage for swift getaway.

Purchased by:

Aeronaves de Mexico • American Airlines
Ansett / ANA of Australia
Braniff Airways • Cathay-Pacific Airways
Eastern Air Lines
Garuda Indonesian Airways
KLM Royal Dutch Airlines • National Airlines
PSA — Pacific Southwest Airlines
Western Airlines

LOCKHEED ELECTRA

The finest short-to-medium haul turbine-age airliner — designed to assure you maximum return on every operating dollar.

LOCKHEED AIRCRAFT CORPORATION, BURBANK, CALIFORNIA

British Information Services Photo

The way is paved for certification of all turboprops as . . .

Napier Converts Convair's 340

by Fred S. Hunter
West Coast Editor

Despite the fact that Napier Engines, Ltd. is the first company to attempt a CAA certification program for a turbine-powered aircraft in the U.S., spokesmen for the company say that approval of the Eland-powered version of a Convair 340 is progressing quicker than was expected. Final certification is now forecast for about the first of September, this year.

Since the project's origin in November 1957 at Pac Aero Engineering Corp., Santa Monica, Calif., a subsidiary of Pacific Airmotive Corp., some delay has been encountered because of changes in compliance requirements.

"The rules are still being written," says one Napier engineer, adding that CAA rule and regulation changes have caused some flight tests to be re-run more than once.

However, a Napier engineer pointed out, CAA personnel assigned to the certification program have often spent evenings, Saturdays and Sundays on some difficult test phase for which there was no established precedent in piston-engined aircraft.

• **After the 340?**—After certification of the 340, Napier will turn its attention to the Eland-powered Convair 440. This aircraft is also under conversion at Pac Aero and will serve as a prototype for the Canadair CL-66, ten of which have been purchased by the RCAF. Although there has been no official confirmation, it is believed that a far greater number of this aircraft will be ordered eventually.

Expected to be ready in about six months, the Eland 440 will probably not undergo the extensive testing of the 340 version. Much data has been gained from the extremely detailed 340 flight tests and, it is hoped, will be applied to the Eland-440 certification program.

• **Tailpipe adapted**—Since beginning the flight tests, only one major change has been made. A stability problem was encountered with the first adaption of the 340 tailpipe installation. By moving it to a slightly higher and slightly forward position on the trailing edge, the problem was solved.

Much work has been done on the application of accessories that may be requested by specific customers. The aircraft is presently equipped with a Rotex 16-hp electric starter motor, but other systems such as the air turbine starters of Bendix, AiResearch, and the British Blackburn/Palouste have either been tried or are under investigation. Present propellers are manufactured by de Havilland but some consideration has been given to the adoption of Hamilton Standard and Aeroprop designs.

Swinging four-blade, 13 ft. 6 in. DH Type 4/6000/6 propellers, the Napier Eland Type 503 (N.El.6) is rated at 3,230 shaft hp for takeoff and 3,500 eshp. Maximum continuous operation is rated at 2,620 shaft hp and 2,910 eshp. Napier says the engine can be uprated to about 3,700, but believe that the advantages of higher hp for the Convair are offset by other factors.

• **Specs**—In the Convair 340/440 conversion, maximum takeoff rpm is 12,500 and maximum continuous 12,000 rpm. Torque limitation is 3,000 shaft hp and power limitation 2,100 shaft hp. The latter limits have been applied to insure against any possible loss of aircraft stability which might result from a large power increase, but without impairing cruising altitude performance. Cruising rpm is started at 11,500. Reduction gear ratio is 0.091:1.

Maximum gross takeoff weight has been increased to 53,200 lbs. This is broken down as follows: 31,871 lbs., basic operating weight; 12,880 lbs. maximum payload (44 passengers, freight and baggage); and 8,449 lbs. maximum fuel with maximum payload (1,268 U.S. gal. kerosene). Maximum fuel capacity is 1,750 U.S. gal.; maximum structural landing weight, 50,670 lbs.; and maximum zero fuel weight, 45,000 lbs. Not included in the gross weight is the optional internally started battery pack.

Napier is quoting operating costs for a 200-mile stage as $142.69 against $155.62 for the piston-engined Convair. The company also says the conversion has a capacity payload range (including reserves) of 970 miles. Time to cruising altitude is cut by 54%, and speed is increased up to 48 knots over the original configuration.

Most of the tests have proven the original computations for the aircraft. In some cases, the initial figures have been exceeded because of an uprating of the engine from its original output in the Convair application.

• **What's the potential**—Napier officials say that an estimated 350 Convairs could be so modified in the not too distant future. One potential market would appear to be "trade-ins" by airline operators as partial payment for new equipment. These aircraft could be converted to zero time or less extensively modified for executive use.

Uprating the Eland would make it a potential powerplant for a DC-7 conversion. Napier believes that DC-7 operating costs could be reduced about 10%, and performance boosted 50-60 knots. Range would remain the same.

The 250-hp Winner

Allison gets $3.2-million contract for small turbine

Allison Division of General Motors —winner in Army's recent 250-shp turbine engine design competition—has received a $3.2 million contract to carry its Model 250 through 150-hour qualification testing. These tests are scheduled to be completed by the end of 1961. The engine will be used in liaison aircraft, aerial jeeps and two-place helicopters.

Torque-limited to 250 shp and with a maximum turbine inlet temperature limitation of 1,750°F, the Model 250 is designed to produce full rated power at sea level on a 100°F day or to altitudes between 7,000 and 13,000 ft. (depending on airspeed) under standard ambient conditions.

The Model 250-B2 turboprop engine weighs 106 lbs. and measures 38.5" long, 19.5" high and 15.8" wide. The Model 250-C2 turboshaft version is some four inches shorter and weighs only 90 lbs. From the maintenance standpoint—a prime consideration in Army type operations—the most intriguing things about the engine are the ease with which it can be disassembled and the fact that, according to Allison's engineers, no single major assembly weighs more than 14 lbs.

One reason why the engine is so simple to tear down is that it is built around its own gearbox. The eight-stage (seven axial, one centrifugal) compressor can be removed in one piece from the front side of the gearbox assembly by disconnecting one oil line and removing three bolts. The hot section can be removed as a unit just as easily from the aft side of the gearbox through which the single-stage gas-producer turbine is splined to the compressor. Air from the compressor is passed to the single combustion chamber through two tubes passing around the gearbox.

A two-stage, free turbine (which can be torn down and built up without rebalancing) supplies power to the aircraft propeller, helicopter rotor, etc. through reduction gears which are offset in the gearbox. Accessories also are driven through the reduction gears. The turboprop engine can be changed to the turboshaft version by changing the front cover assembly of the reduction gear section of the gearbox.

Another advantage in the layout of the Model 250 is that, since the engine mount pads are located on the gearbox, there are no stress problems as a result of "growth" during engine operation.

This announcement appears as a matter of record only.

NEW ISSUE June 26, 1958

$1,000,000

New York Airways, Inc.

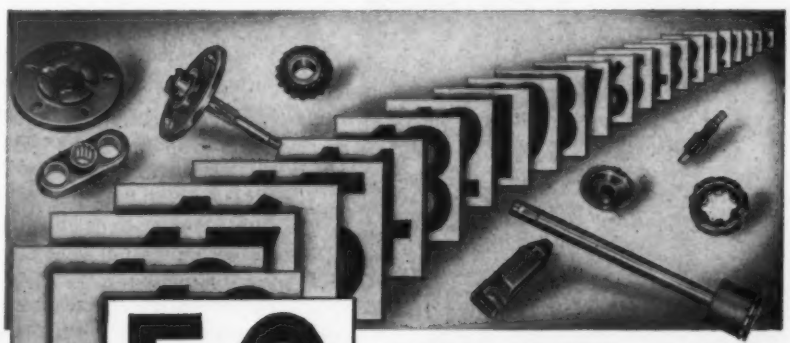
5¼% Guaranteed Notes, 1958-63

The undersigned acted as agent for the Company in arranging for the placement of the Notes with certain institutional investors.

Smith, Barney & Co.

NEW YORK PHILADELPHIA CHICAGO BOSTON SAN FRANCISCO

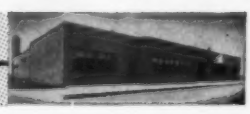
Albany • Allentown • Cleveland • Hartford • Milwaukee • Minneapolis



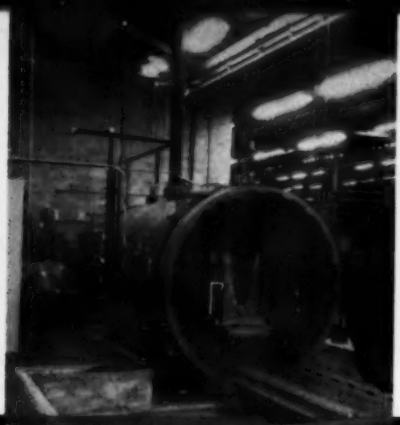
50 YEARS OF EXPERIENCE
in the manufacture of
SMALL MACHINE PARTS
OF HIGHEST PRECISION

The equipment you design and produce demands the finest quality in each of its components. For those machine parts requiring fine finishes, difficult machining operations, and closest tolerances specify LaVezzi and be certain of parts that meet approval. Your quotation requests will receive prompt and careful consideration. Illustrated brochure will be mailed upon request.

LaVezzi MACHINE WORKS
4635 WEST LAKE ST., CHICAGO, ILLINOIS

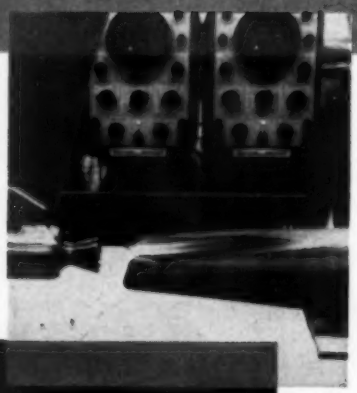


Circle No. 5 on Reader Service Card.



Temco | AIRCRAFT DALLAS

CAN PUT HI-TEMPERATURE STRUCTURES INTO YOUR PRODUCTION



When Temco engineered and developed the aft-fuselage and vertical stabilizer section of Convair's B-58 Hustler . . . the wing section and fuselage panels of Temco's own TT-1 jet trainer . . . the wings of the air-launched "Teal" missile . . . the aircraft industry acknowledged Temco as a leader in development and production of honeycomb sandwich and hi-temperature structures. Missile applications currently programmed are substantial recognition of Temco's stature.

At Temco metal and plastic sandwich structures have been employed in all types of airframe applications, with notable development in the field of stronger, higher heat-resistant metal bondings . . . in improved plastic materials and methods of reinforced plastic honeycomb fabrications.

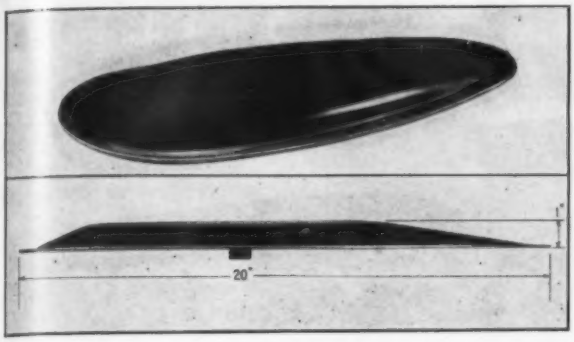
Other outstanding advances now under development at Temco are a new low-cost process for brazing stainless steel honeycomb structures, employing a revolutionary new concept . . . and experimental progress in the new field of "cermets."

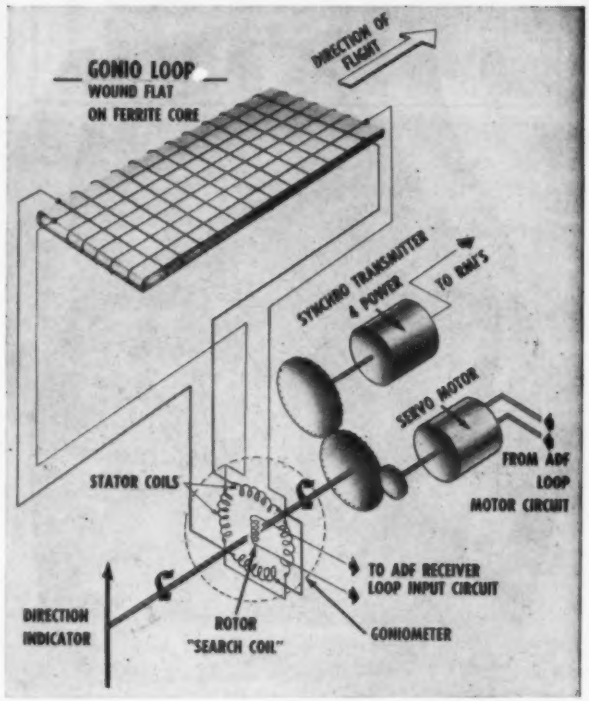
Since pioneering the "total package" concept of subcontracting . . . design, tooling and production . . . Temco's engineering staff and facilities have increased significantly, a growth as rapid and as sound as that of the industry they serve. Today these design support capabilities have been extended to encompass complete systems management. **Whether your need is for a component, a subassembly, or a subsystem, an inspection of Temco capabilities will prove profitable.**

YOUR INQUIRY IS OUR CHALLENGE AT . .

TEMCO

AIRCRAFT CORPORATION • DALLAS, TEXAS





Teardrop-shaped antenna (above) developed by Lear protrudes only one inch above fuselage, permits flush-mounting. Inside the aircraft is the sensing mechanism and a resolver-transducer (right)

Goniometer; New Approach to ADF

by George R. Shaw, Jr.

The Greeks supplied the word—"Goniometer"—and LearCal Division of Lear, Inc. supplied the electronic knowhow to provide a completely new antenna system for aircraft radio-direction-finding equipment.

Engineered as a replacement for the years-old (albeit tried-and-true) rotating loop ADF, the new antenna is said to improve reception gain of present ADF installations by as much as 4 db. Lear also says the new system reduces overall weight of ADF equipment and permanently eliminates antenna maintenance.

Literal translation of Goniometer is "to measure an angle." There is nothing new in the principle involved, as the basic technique of radio direction-finding involves measurement of an aircraft's angular relationship to a given ground sending station.

But Lear puts the principle in modern dress by applying new electronic navigation techniques developed in the company's research and development lab in Santa Monica, Calif. The new system is concerned mainly with improving reception at the antenna and more efficiently resolving the received signals into usable angle information.

Elimination of the rotating loop is described as the most significant aspect of the system. This was accomplished by substituting a flat, omni-directional antenna, consisting of two loops wound at right angles to each other, on a flat ferrite core. Immediate result of this was elimination of the cumbersome rotating loop and its drive motor.

The extremely low silhouette of the new antenna unit allows for flush-mounting, important where pressurization is involved. Once installed, the unit is permanent. It is tear-drop-shaped, protruding a mere one inch above the fuselage surface. A one-inch hole in the aircraft skin provides access for the single connecting plug.

Lear says the antenna installation will require no maintenance. The unit can be mounted anywhere on the airplane, preferably on the upper side, where it will be out of the way.

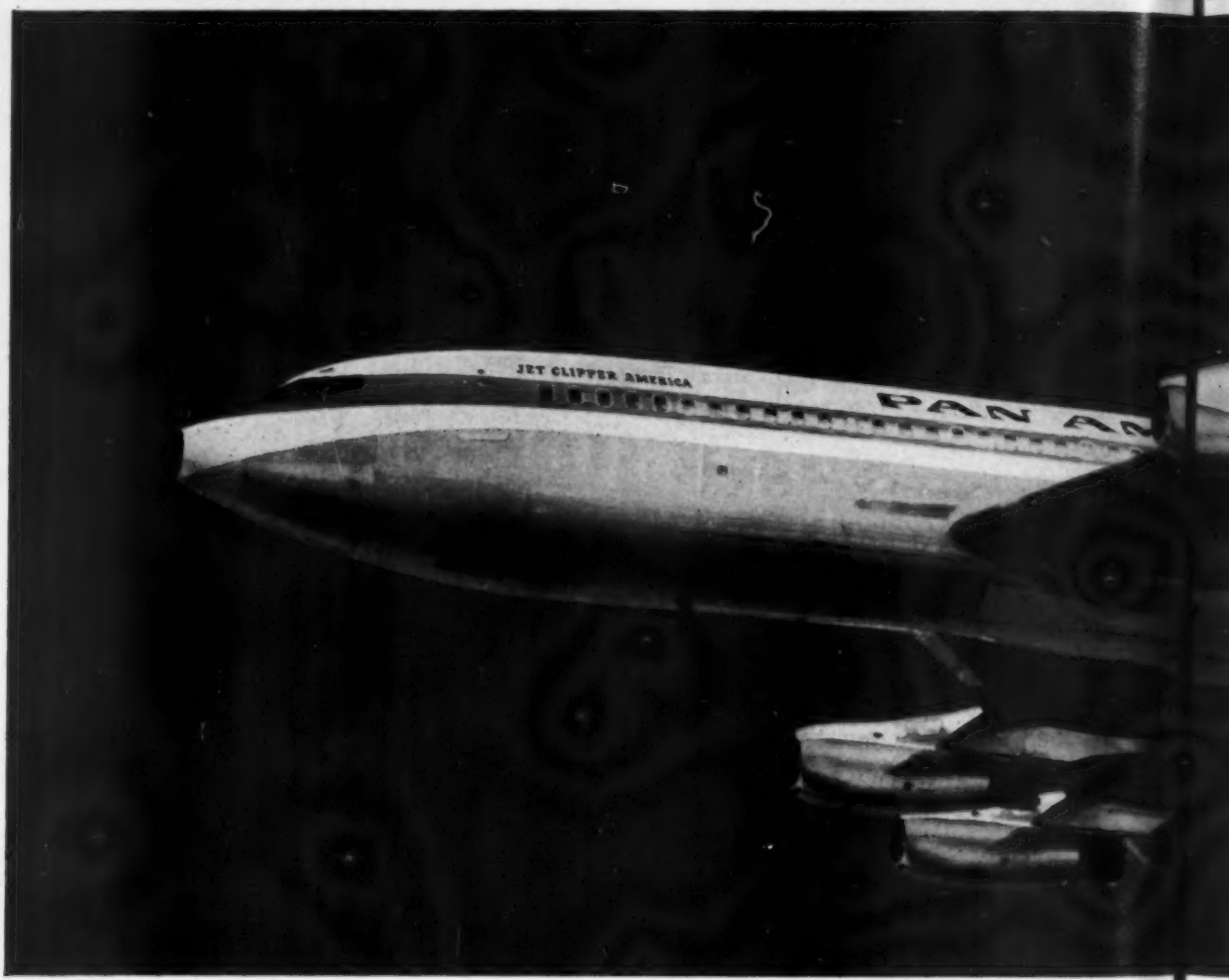
Sensing mechanism for the new system, a resolver transducer is mounted inside the aircraft, convenient to the operator. The resolver transmits the signal received at the antenna to the radio-magnetic indicator pointer to show the bearing to the ground station.

In the old system two miniature coils reproduce the magnetic field present at the larger loops of the antenna. A search coil is used to "search" the field at the miniature coils to determine the directional character of the field at the larger loops.

The resolver transducer has two stator windings that duplicate the function of the two miniature loops. The rotor of the resolver is analagous to the search coil. The signal induced in the rotor (a function of the position of the rotor with respect to the stator windings), is fed to the ADF loop input circuits, duplicating the output of the ordinary rotating loop antenna. The search coil part of the resolver can be driven to a null point with respect to the stator coils by the output from the ADF, in the same manner that the servo motor drives a rotating loop to a null point with respect to a directly received radio signal.

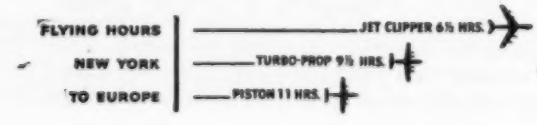
Installation of the new system can be made without modification of the existing ADF equipment. Total weight of the complete Goniometer System, with the exception of the cables, is 5.3 lbs, a considerable saving in weight over the old system. The Civil Aeronautics Administration certified the system recently under TSO-C41 and orders are being filled for installations in airline and business aircraft.

This Fall 6½ MAGIC



PAN AM STARTS FIRST JET SERVICE!

Starting this fall: the No. 1 airline across the Atlantic welcomes you to a magic world of travel! Fares as low as $453.60 round trip to London, $489.60 to Paris... daily from New York.



Pan Am's Jet Clippers* are the first transatlantic jet airliners. They are pure jets, a major advance over turbo-props. Four massive jet engines give you beautifully quiet, vibration-free comfort at 600 mph.

Cruising altitudes are between 25,000 and 40,000 feet, up where it's possible to "ride" the jet stream currents.

Jet Clippers will offer the finest, fastest

C HOURS TO EUROPE

The first Jet Clippers are Boeing 707s, the most thoroughly flight-tested aircraft ever to enter commercial service.

E! DAILY...LONDON 6½ hrs! PARIS 7 hrs!

transatlantic service. No increase in minimum fares. Coming: Jets to Latin America, the Pacific and 'round the world.

For full reservations, call your Travel Agent or one of the 53 offices of Pan Am in the U. S. and Canada.

*Trade-Mark, Reg. U. S. Pat. Off.

PAN AM

FIRST AND ONLY JETS ON THE ATLANTIC
FIRST ON THE PACIFIC
FIRST IN LATIN AMERICA
FIRST 'ROUND THE WORLD

Pan American, world's most experienced airline, carries almost as many people to Europe as the next 2 airlines combined

Fiat Scores a Comeback With the F-86K

After a tough time in the early postwar years, this Italian company is back to offer stiff competition

by Anthony Vandyk
International Editor

TURIN, ITALY—with the on-time delivery of the last of 221 license-built North American F-86K fighters, Fiat has fully re-established itself as one of Europe's leading aircraft manufacturers.

After a difficult postwar period, the aviation division of this Italian industrial giant started the licensed production of the F-86K three years ago (AMERICAN AVIATION, August 1, 1955). As the only program involving the European manufacture of an American combat aircraft, this represented an important challenge to Fiat.

The fact that the program has been successfully completed is new evidence of Fiat's ability as a "can do" organization. Few other manufacturers can boast of having such versatility as Fiat's aviation division. At the moment it is building in quantity the G-91 lightweight fighter, overhauling F-86Ks and their J47 engines, manufacturing tail assemblies and other components for the Sud-Aviation Caravelle, producing Sikorsky S-58 gearboxes and overhauling P&W R2800 and C-W Turbo Compound engines, to mention only some of its activities.

These diverse functions might represent a problem to many companies but Fiat's aviation division is accustomed to building other manufacturers' products as well as its own. In fact, the first Fiat-produced aircraft was the French Farman 5B, which was manufactured in 1914. Fiat's activities in the aero-engine field started even earlier—1908.

• **Heavy backlog of experience**—Since World War II Fiat has been associated with manufacture and overhaul of a variety of jet engines. It has built complete de Havilland Ghosts as well as parts for the DH Goblin, Allison J35, General Electric J47 and C-W J65. The manufacture of J65 parts and IRAN work on J47s comprises Fiat's main activity in the jet engine field at present. It is expected that the company will soon start building parts for the Bristol Orpheus and will overhaul that engine.

The Fiat engine facility is also busy overhauling P&W R2800s and C-W Turbo Compounds, principally for Alitalia. The propeller section currently overhauls propellers for two Fiat-designed aircraft long out of production but still in service in various parts of the world—the G-59 trainer and the G-212 three-engine transport.

Once a leading designer of both aircraft and engines, Fiat is again building its own designs. The first Fiat model for many years with both a Fiat-designed engine and airframe is the 7002 "cold jet" helicopter, described in AMERICAN AVIATION of Dec. 16, 1957, p. 32. This small (3,000-lb.) rotorcraft will be powered by a Fiat 4700 gas generator developing 500 hp. The 4700 is one of a family of small gas turbines being developed by Fiat.

• **Fighter plane is pride**—The pride and glory of the Fiat's aviation division is the G-91, designed by Guiseppe Gabrielli, who heads up the division and has been designing Fiat aircraft since the early thirties. This Orpheus-powered lightweight fighter is the division's only production aircraft and is likely to remain the main source of bread and butter for the division for several years to come.

After a contest with French aircraft of similar type, the G-91 was selected as the NATO lightweight fighter. Built under the U.S. Mutual Weapons Development Program, the G-91 is being ordered for use by several of the European NATO nations. The Italian, French and German air forces are expected to order 50 aircraft each and these contracts are likely to be matched by a U.S. off-shore procurement order for another 150 planes.

Ultimately, it is likely that at least 500 G-91s will be built and that the aircraft will be used by the air forces of Turkey and Greece as well as the other nations mentioned above.

Fiat will handle the production of most of these aircraft, subcontracting some components to other Italian manufacturers (notably Piaggio and SIAI-Marchetti). However, second sources for the G-91 are likely to be set up in Germany (Messerschmitt) and France (Dassault).

Giuseppe Gabrielli would like to have the G-91 regarded as the first truly European aircraft rather than as an Italian plane and is encouraging France and Germany to cooperate as much as

GUNS AND AMMUNITION of the G-91 are contained in this easily removable panel. Rearming the aircraft takes seconds, it involves removing one panel, substituting another.

QUICK TURNAROUNDS at front-line fields are possible with the G-91 due to the special ground equipment for the aircraft designed and manufactured by Fiat.

possible in the production program. He has already achieved a degree of co-operation hitherto unknown between European manufacturers in establishing a close tie between Fiat and Sud-Aviation. The two companies have established a parts design bureau in Milan and hope to bring more manufacturers into this setup.

The G-91 is at the moment in the pre-production stage (the U.S. sponsored the construction of three prototypes and 27 pre-production aircraft). The eleventh plane is about to come off the line at Caselle, the Fiat assembly plant just north of Turin. It is here that the aircraft are flight-tested.

• **Flight performance remarkable**—The flight performance of the G-91 is really remarkable. Maximum speed is 580 knots at sea level and Mach 0.91 at 20,000 ft. Even at its maximum take-off weight of 11,000 lbs. (20% of which is armament) it takes off to clear a 50-ft. obstacle in about 3,000 ft. It lands in less than 2,000 ft.

The G-91 is designed to operate from grass strips in forward area to perform its mission as a tactical support fighter. Specially-designed ground equipment facilitates ultra-rapid refueling and re-arming.

In addition to the standard G-91, a G-91R reconnaissance version is currently being built by Fiat in the company's experimental shops. Also projected is a G-91T trainer version. These three models form a matched team which should be of interest to countries outside NATO as well as those in it.

Certainly, at the price of half that of a normal fighter, the G-91 should be attractive to many of the smaller nations. Fiat has already had evidence of South American interest in the G-91.

Fiat's main present preoccupation is the G-91 but most of the activity of the aviation division is still centered around the F-86. Several important rehabilitation and IRAN contracts involving various marks of the North American fighter are still being executed. About 12 aircraft are being given IRAN treatment each month and a similar quantity is rehabilitated each month, with the U.S. picking up the tab for most of the work.

The first batch of F-86Ks of the Italian Air Force sent to Fiat by the Italian Air Force for IRAN recently arrived at Caselle. It is expected that it will take about a year and a half for Fiat to complete IRAN work on all 65 of the Italian Air Force's F-86Ks.

IRAN work has been in progress at Caselle for about two and a half years. Fiat's first contract involved the F-86D. About 95 F-86Ds have been given IRAN treatment and, by the time the program ends in September, the total will be 150. Fiat also will perform IRAN work on the Italian Air Force's F-86Es (the version of the North American fighter built under license by Canadair in Montreal and known as the Sabre 4). About 85 aircraft will be involved.

Fiat is also rehabilitating F-86Fs. Originally it was scheduled to rehabilitate 60 aircraft but this contract has been cut back to 28 planes. The program started about four months ago and will be completed at the end of the year.

With continuing F-86 IRAN work, the start of the G-91 program and its diverse activities, Fiat's aviation division is in good shape to face the immediate future. However, there is plenty of spare production space available in the various aviation plants and Fiat is vigorously seeking new business.

"L·I·F·E" with LEAR

By BOB MAYS

My job is flying and demonstrating the LEAR L-5/LIFE equipment. This, you will say makes me prejudiced. To this, I agree, because day after day I see many people, including all types of pilots, engineers, etc., who "wring-out" this equipment and come up with nothing but praise.

On my "check-out" flight in a twin aircraft I'd never flown before, using LIFE I'd never seen before, I completed two of the best ILS approaches I've ever made. Next, I made an automatic approach with the L-5 autopilot which was even smoother than the one I had done manually. I especially liked being able to monitor the entire approach on LIFE while the L-5 autopilot did the job.

The L-5/LIFE combination is a great relief to me, especially when I'm flying as a one-man crew. I am free to monitor engine instruments, navigate, communicate, and best of all in this day of heavy traffic density, watch out for other aircraft—greatly decreasing the chance of collision.

The NAFLI ATTITUDE/COMMAND INDICATOR gives me a clear and *natural* presentation of my aircraft's attitude at all times. And in ILS approaches I simply follow its *command* signals for smooth, precise interception of the localizer and glide slope.

The SITUATION DISPLAY INDICATOR pictures my position in relation to the localizer beam, VOR radial or selected track—in the meantime, the L-5 holds my assigned altitude and flies the heading or track I have chosen.

To fly an airway, I merely push two buttons, and I automatically maintain my desired altitude and track. Even my *wind correction* is figured automatically and compensated for me. And the SITUATION INDICATOR shows me my exact crab angle due to cross-wind.

I often fly long hours, and the L-5/LIFE combination allows me to arrive at my destination far less fatigued and therefore mentally alert to approach and land, which is vitally important.

Because of L-5/LIFE's simplicity and reliability, I have lowered my personal minimums considerably—it has taken all the sweat out of low visibility ILS approaches.

Holding patterns, weather and clearances are no longer a three-man job. I receive and transmit clearances while flying a holding pattern by merely turning a knob or pushing a button.

All kinds of people have flown "LIFE"—a 15,000 hour airline captain—private pilots, both IFR and VFR—and their praise was unanimous.

In conclusion, this L-5/LIFE combination is not only wonderful to fly, but a real thrill to demonstrate. As the French say, "C'est la vie"... THIS IS "LIFE"!*

Bob Mays

L·I·F·E

*Lear Integrated Flight Equipment

LEAR NAFLI INDICATOR →

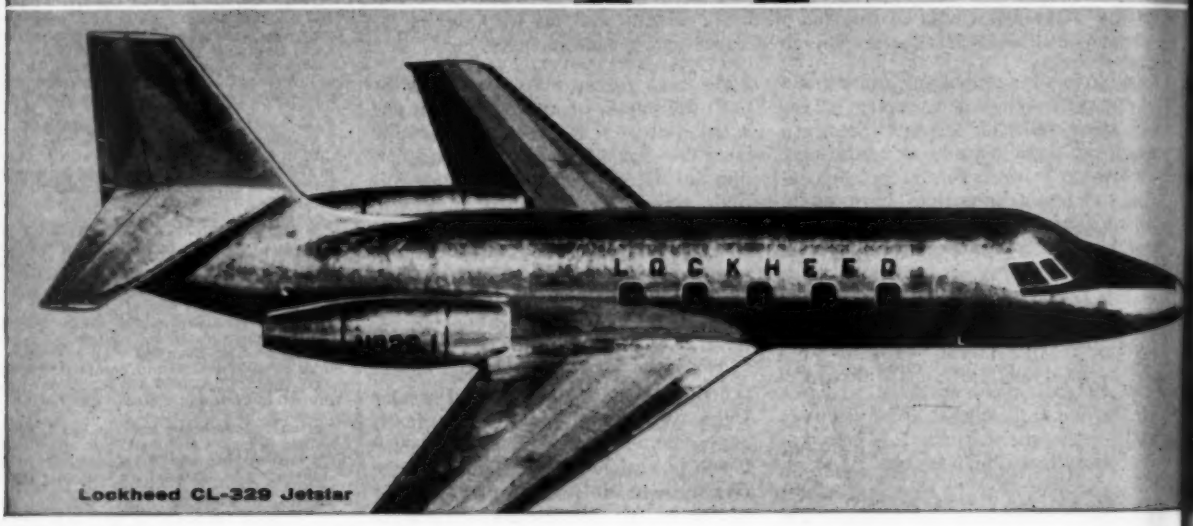
LEAR SITUATION DISPLAY INDICATOR ↓

Write, wire or phone for a demonstration at your home base:

LEAR *L-5/LIFE*
3171 South Bundy Drive
Santa Monica, California

BRISTOL: Power for the Wings of the World—No 3

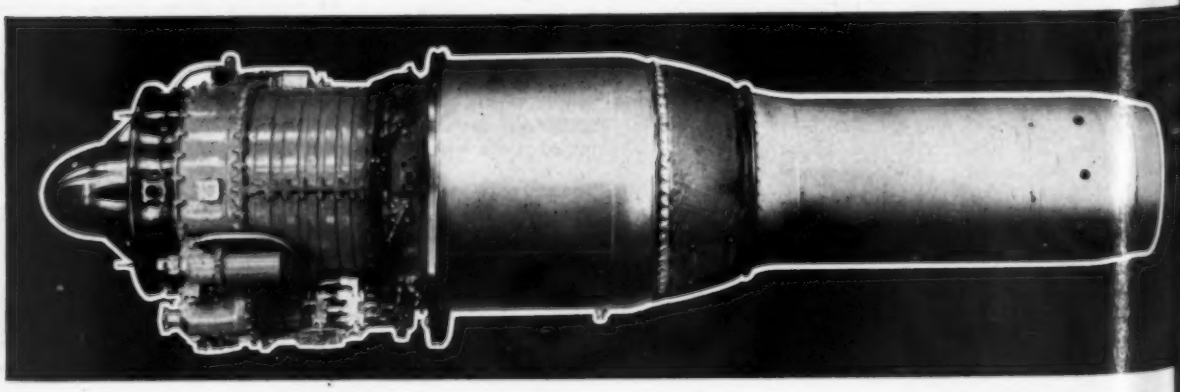
Breguet 1001 Taon

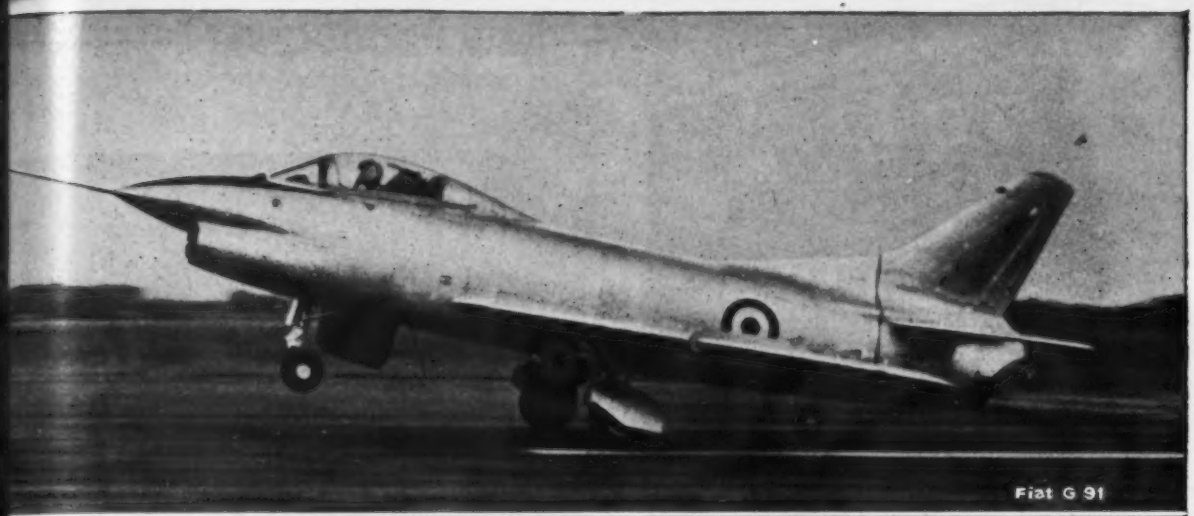


Lockheed CL-329 Jetstar

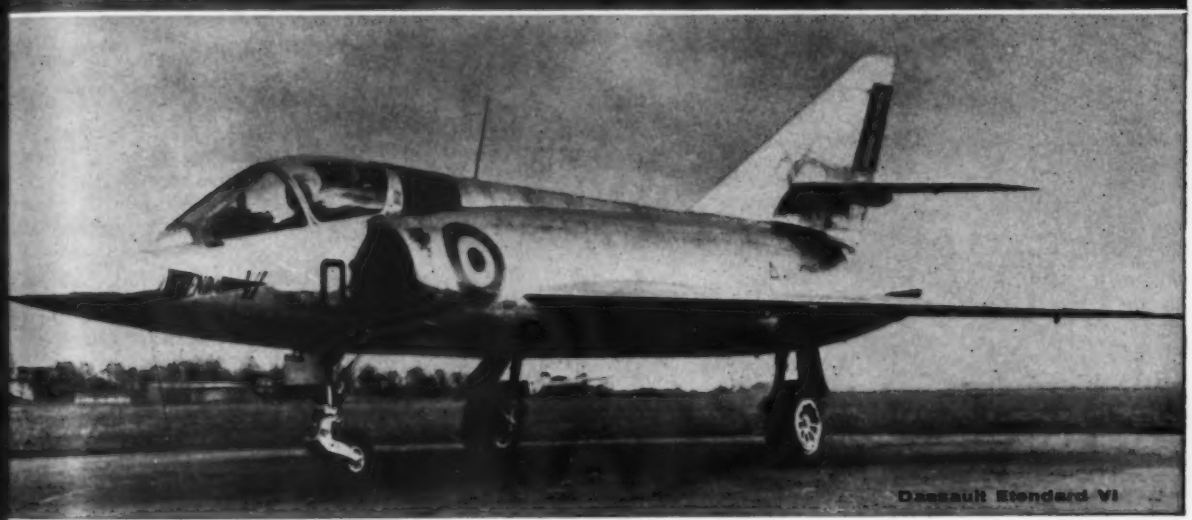
WORLD'S DESIGNERS SPECIFY **ORPHEUS** POWER

in fighters, strike aircraft, executive transports, and trainers





Fiat G 91



Dassault Etendard VI

Orpheus-powered Taon holds world speed record for 1,000-km closed circuit

The Bristol Orpheus goes from strength to strength. Now, an Orpheus-powered Breguet 1001 Taon holds the world speed record for the 1,000-km closed circuit. The Taon averaged 649.7 mph. This French fighter is *one* of the increasing variety of aircraft for which the Orpheus is specified.

The current Orpheus 3 is rated at 7,850 lb and has the outstanding thrust/weight ratio of almost 6:1. The Orpheus 1, the trainer version, is rated at 4,230-lb thrust; it is designed for the lowest possible fuel consumption and long life between overhauls.

Dimensions Orpheus 3: Length 75.5 in Diameter 32.4 in.

MOST ADVANCED TURBOJET IN ITS CLASS

Orpheus development continues. The latest version, the Orpheus 12, has a still higher power/weight ratio, giving 6,810-lb thrust dry, over 8,000-lb with Bristol simplified reheat.

Versions of the Orpheus power—or are specified for—the following aircraft:—

Lightweight fighters/strike aircraft

Folland Gnat	UK, INDIA, FINLAND
Fiat G 91	ITALY
Dassault Etendard VI	FRANCE
Breguet 1001 Taon	FRANCE
Hispano HA 300	SPAIN
Aerfer Leone	ITALY
Dassault Etendard IV (alternative engine)	FRANCE
Sud Aviation Baroudeur (alternative engine)	FRANCE

Executive transport/ crew-readiness trainer

Lockheed CL-329 Jetstar*	US

Trainers

Folland Gnat Trainer	UK
Fuji TIF 2	JAPAN
Fiat G 91 T	ITALY
North American Model 249 (alternative engine)*	US

Research Aircraft

Short SB-5	UK

*Production versions of the Jetstar and Model 249 are being offered with Wright TJ 37 engines. The TJ 37 is a derivative of the Orpheus, jointly developed by Bristol and Curtiss-Wright.

BRISTOL
Aero-Engines

BRISTOL AERO-ENGINES LIMITED · ENGLAND

THE BRISTOL AEROPLANE CO (USA) INC
400 PARK AVENUE, NY 22, NY

Helicopter Blade Tracker

Chicago Aerial Industries has received a contract from the Navy for its Model WM-1A electronic blade tracker. Designed to eliminate hazards and increase accuracy of tracking rotor blades, the new device is said to result in savings due to increased helicopter availability and reduced manhour requirements.

Circle No. 100 on Reader Service Card.

Portable Radio Direction Finder

Developed by Allen and Bradford Div. of Coven Music Corp., the DF-O-Matic Navigator weighs 6 lbs. including batteries. Direction to the selected station is indicated automatically by a meter.

Circle No. 101 on Reader Service Card.

Mobile Passenger Ramp

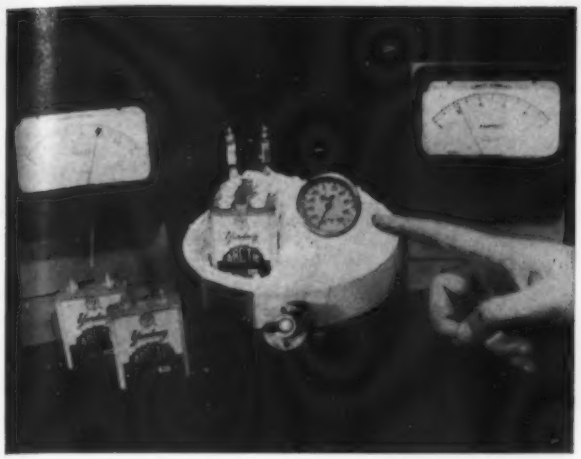
Mounted on a pick-up truck, hydraulic lift passenger ramp by Bil-Jax, Inc. is raised or lowered from driver's seat to match level of plane's door. Hydraulic stabilizers at front and rear of vehicle also are controlled by driver.

Circle No. 102 on Reader Service Card.

Air Cargo Belt Loader

Willys Motors, Inc. have mounted a 2-ft.-wide conveyor belt on a DJ-3A Dispatcher chassis to provide a cargo conveyor 20-ft. long with a loading height ranging from 5 to 11 ft. Height at rear is 2½ ft. Capable of handling distributed weights to 1,000 lbs., conveyor is powered by a Vickers vane-type pump, belt-driven from the "Jeep" engine crankshaft.

Circle No. 103 on Reader Service Card.



Battery for Low-Temperature Operations

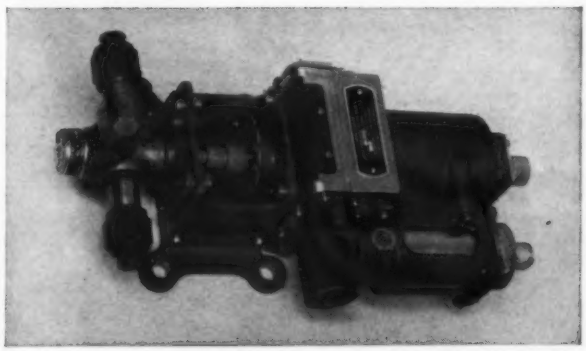
Yardney Electric Corp.'s "Arctic" is said to operate at temperatures from 200°F down to –100°F with terminal potential approximating 2.30 volts at –100°F and 2.55 volts at room temperature. Hermetically sealed, battery is expected to have infinite shelf life.

Circle No. 105 on Reader Service Card.

Pressure Ratio Control Valve

Equipped with a sensing mechanism to measure pressure ratio within ¼% over a pressure altitude range of 15 to 1, 3,000-psi hydraulic servo valve is used to operate jet engine exhaust nozzle to control turbine pressure ratio. Designed by Consolidated Controls Corp. to mount directly to engine, weight of complete unit is given as less than 7 lbs.

Circle No. 104 on Reader Service Card.



Refrigerator for Airliner Galleys Eliminates Dry Ice

A small, lightweight Freon food refrigerator system for airliner galleys has been developed by the AiResearch Manufacturing Corp. The unit will have its first commercial use by Pan American World Airways.

Designed to eliminate the need for bulky dry ice and the allied problems in handling and packaging, the new unit features the first hermetically sealed Freon compressor for 400 cycle ac current ever made. Compressor, motor and enclosure weigh but 20 lbs.

Smaller than the average home refrigerator compressor, the system furnishes a 1/3-ton cooling capacity for two 11-cu.-ft. galley refrigerators.

The AiResearch system will maintain temperatures of 10-20°F in the freezing compartments for ice cubes, ice cream and the like. Food compartment temperatures will be held to 32-40°F to keep edibles fresh without freezing.

Including the oil, Freon and controls, the entire package weighs 37 lbs. It will be hung from the roof of the baggage compartment, which is directly below the galley.

The automatic temperature control can be manually adjusted. Three protective controls are provided for conditions of high Freon pressure, high ambient temperature and high voltage.

Rated at one-half ton cooling capacity at 90°F the system can be used also for cooling of electronic equipment or air conditioning.

Circle No. 106 on Reader Service Card.

• **Air-actuated vent valve**—Designed to work with all aircraft fuels, an air-actuated vent valve by **Aero Supply Mfg. Co., Inc.** controls fuel-level sensing without floats. Valve permits free flow of air in both directions when fuel-level sensing device is exposed to air. Normally closed when sensor is submerged in fuel, valve will open to relieve tank pressure above a set value.

Circle No. 107 on Reader Service Card.

• **Rudder-pedal link**—Developed by **Pacific Scientific Co.**, a rudder-pedal adjustment link consists of a spring-loaded sliding shaft which extends when dual locking collars are released. Normally locked, collars are unlocked by application of power to a solenoid. Link can be applied to control locks and seat adjustments, manufacturer says.

Circle No. 108 on Reader Service Card.

• **Blade antenna**—L-Band blade antenna designed to operate in the 950-1250 mc band for use with communication and navigation equipment installed in high-speed aircraft has been developed by **Canoga Corp.** Designated Model 9926, the new blade antenna is 3.55″ long, extends 1.7″ from the skin of the airframe and weighs 3¼ ounces.

Circle No. 109 on Reader Service Card.

• **Brake-control valve**—A brake-control valve designed to work in pneumatic, hydraulic or combination pneumatic-hydraulic service is offered by **Tactair Valve Div., Aircraft Products Co.** The 3,000-psi valve has a forged aluminum alloy housing, operates at temperatures ranging from –65°F to 160°F and weighs 1¼ lbs., the company says.

Circle No. 110 on Reader Service Card.

• **Self-powered navigation aid**—Dubbed "The Navigator" by manfacturer, Zenith Radio Corp., two-band, all-transistor, portable radio is said to be usable for homing on standard broadcast stations, 150-400 kcs CAA weather-navigation stations and marine beacons.

Circle No. 111 on Reader Service Card.

"... your old men shall dream dreams, your young men shall see visions."

This is the Missile Age. But where will it lead? What are its visions?

At Martin, advanced design engineering and pure science are independently at work seeking answers to these space-sized questions.

Advanced Design: Top systems designers, requirements specialists and creative engineers—on such pioneering projects as VANGUARD, TITAN and a variety of related space systems developments—are already applying their cumulative knowledge to tomorrow's technical problems of lunar probe and manned orbit vehicle design.

Pure Science: And at our Research Institute of Advanced Study an already established and recognized organization of independent scientists is at work in the field of fundamental research, which alone can open the closed doors of tomorrow's technology. Work currently under way at RIAS includes new investigations into particle physics, gravitation, photosynthesis and cosmic radiation.

Somewhere in the early hours of tomorrow, these two main bodies of creative effort will meet on the threshold of a new age beyond the missile.

MARTIN

BALTIMORE · DENVER · ORLANDO

—LITERATURE—

• **Ground Handling**—Fact sheet and complete details are available on new ground handling concept said to eliminate airport docking facilities and to be applicable to all aircraft. Atlas Industrial Corp.

Circle No. 112 on Reader Service Card.

• **Materials Handling:** 12-page illustrated booklet lists important factors to be considered in initiating a materials handling program. Selection of the right hand truck for a job, choosing between pallet or platform loading, etc. are among subjects discussed. Automatic Transportation Co.

Circle No. 113 on Reader Service Card.

• **Miniature Blowers:** 8-page catalog describes miniature axial and centrifugal blowers and fans for electronic cooling, ventilating and exhausting. Included are performance curves, MIL specs. and other technical data. Globe Industries, Inc.

Circle No. 114 on Reader Service Card.

• **Ultrasonic Cleaning:** 24-page illustrated booklet explains practical application and basic principles of ultrasonic cleaning as well as design of equipment. Branson Ultrasonic Corp.

Circle No. 115 on Reader Service Card.

• **Steel Tubing:** 8-page bulletin explains how use of the right type of stainless steel mechanical tubing will result in savings to the manufacturer. Folder includes industry tolerance tables covering diameter, ovality, wall thickness, etc. for both seamless and welded tubing. The Babcock & Wilcox Co.

Circle No. 116 on Reader Service Card.

• **Transistors:** Interchangeability chart covers all E.I.A. registered transistors comparable to G.T. types. General Transistor Corp.

Circle No. 117 on Reader Service Card.

• **Resin Data Chart:** Multicolored wall chart portrays various properties of standard resins. Chart includes data on thermal expansion coefficient, maximum and minimum use temperatures, possible uses and expected results. Emerson & Cuming, Inc.

Circle No. 118 on Reader Service Card.

• **"O" Ring Tables:** 16-page booklet supplies complete cross-reference data between ARP 568 uniform "O" ring sizes and former "S" sizes. Also presented are cross-reference sizes for government drawings of the AN, MS and CKCX series. E. F. Houghton & Co.

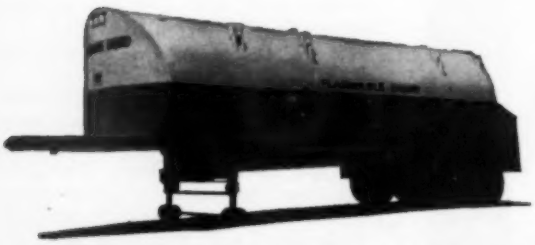
Circle No. 119 on Reader Service Card.

CAPABILITIES . . . Manpower, Tools and Experience

This Giant
SPACE-AGE THERMOS
Simplifies the Handling of Liquid Gases

How to transport hundreds of gallons of liquefied gases with maximum safety, maintain near-perfect vacuum and hold temperatures approaching 460 degrees below zero without the use of auxiliary refrigeration equipment? This was the problem successfully solved by Beechcraft engineers in only **five month's time** with the design, development, production, and delivery of the Beechcraft Dewar, first of its type ever produced.

Beechcraft scientists and engineers are at work on numerous projects involving transporting and storing of cryogenic liquids, plus projects in many aeronautical fields. A letter today to our Contract Administration Division will bring full information on how Beechcraft's five major plants, 1¾ million square feet of plant area, and 7,000 skilled craftsmen can help solve your research, development, or production problems.



Beechcraft

BEECH AIRCRAFT CORPORATION • WICHITA, KANSAS, U. S. A.

Beech Builds: U S Navy T-34 • USAF T-34 • U S Army L-23 • Bonanza • Travel Air • Twin-Bonanza • Super 18 Executive Transport

Airpower Politics

The Berlin Blockade: A Study in Cold-War Politics. By W. Phillips Davison. Published by Princeton University Press, Princeton, N.J. 379 pp., illustrated. Price, $7.50.

Perhaps more interesting as a political study than as aviation literature, this Rand Corp. research study is fascinating reading from cover to cover. On the other hand, there is a constant undercurrent of air power's effect on the Allies' bargaining power in the Berlin crisis of 1948. The effect of the Berlin airlift is a major theme in Davison's study.

From the Beginning

U.S. Air Power. By Samuel Taylor Moore. Published by Greenberg: Publisher, New York. 189 pp., illustrated. Price, $5.95.

Starting with the balloons of the Civil War, Moore's study carries up to the present. Full treatment is given to the many falters on the way to today's air power.

The Best-Hated Man

Mitchell, Pioneer of Air Power. By Isaac Don Levine. Published by Duell, Sloan and Pearce, New York. 400 pp., illustrated. Price, $6.

Levine's study is based on Mitchell's own writings, his family's records and first-hand accounts. The result is personal and penetrating treatment of "the best-hated man" in the Army.

The Men of SAC

SAC. By Richard G. Hubler. Published by Duell, Sloan and Pearce, New York. 280 pp. Price, $4.50.

The Strategic Air Command story is timely, fascinating reading. Hubler does an excellent job of describing the men of SAC, their motivations and their attitude toward a possible mission of annihilation. Although he devotes most of his attention to such men as Gens. LeMay, Kenney and Powers, Hubler runs through the entire chain of command. His treatment of the planes, the missiles, the command and SAC research is equally admirable.

For the Designer

Fluid-dynamic Drag. Publisher and author, Dr. Sighard F. Hoerner, 148 Busteed Dr., Midland Park, N.J. 400 pages. Price, $15.

This is, in effect, a second edition of the author's book, *Aerodynamic Drag.* However, material has been brought up to date and doubled in volume. Two chapters have been added on hydrodynamics and water-borne craft as well as one chapter covering wind loads on various structures, especially buildings.

The Big War's Aces

American Aces in Great Fighter Battles of World War II. By Edward H. Sims. Published by Harper & Brothers, New York. 248 pp., illustrated. Price, $3.95.

The book recreates what the author considers the most exciting missions flown by 12 top surviving World War II fighter pilots. Introduction is by Gen. Nathan F. Twining. The author uses official records and first-hand accounts as his sources.

AMB: Symposium Record

Airways Modernization Board—Its Missions and Methods. A monograph published at Lancaster, Pa. under the auspices of the Journal of The Franklin Institute, Philadelphia. Price, $4.

This 160-page soft-cover book covers the proceedings of the symposium sponsored by The Franklin Institute Dec. 16-18, 1957, in Philadelphia, including papers delivered by officials of the Airways Modernization Board and remarks of the chairman of that board, Elwood R. Quesada (Lt. Gen., USAF, ret.) and Under Secretary of Commerce Louis S. Rothschild.

Why Do They Happen?

Plane Crash. By Clayton and K. S. Knight. Greenberg, Publisher, New York. Price, $4.50.

To illustrate efforts being made to solve the mysteries of air accidents, the authors have delved into the records covering major disasters caused by a wide variety of circumstances. The facts leading up to and accompanying these accidents are presented with illustrations. Ensuing investigations are detailed and the findings and recommendations of the investigating boards are given.

At the Beginning

First Flights. By Oliver Stewart. Published by Pitman Publishing Corp., New York. 217 pp., illustrated. Price, $5.50.

In using first flights as an outline of aviation history, Stewart achieves considerable success. His coverage, in most instances, is thorough, and the overall picture of aviation history he creates is backed by clear, concise prose.

F-102A Test Program

A Day in the Life of a Supersonic Project Officer. By Lloyd Mallan. David McKay Co., New York. 178 pages. Price, $3.95.

The story of combat-readiness testing of Convair's F-102A supersonic all-weather interceptor and, at the same time, a realistic account of Air Proving Ground Command operations. Published for the first time are 133 photographs taken by the author, many during actual tests.

WAUSAU

COMPLETE ICE AND SNOW FIGHTING EQUIPMENT

Write today for the name of your nearest WAUSAU distributor who will assist you in getting year 'round maintenance equipment to fit your needs.

TRUCK GRADER ICE BLADE

Maintains, cuts and grades- removes ice and hard-packed snow hazards . . . full power hydraulic cab control.

SNOW PLOWS

WAUSAU specialists in snow plows . . . 55 models and 9 types to select from . . .

MATERIAL SPREADERS

Quick action spreading is a feature of this low cost self-contained unit.

WAUSAU IRON WORKS WAUSAU–WISCONSIN

Pioneer Snow Plow Builders
Truck Patrol Ice Planer and Material Spreaders

Summary of U.S. Airline Revenues And Expenses for First Quarter 1958 vs. First Quarter 1957

Compiled by American Aviation Publications from Official CAB Data

Airlines	Total Operating Revenues			Passenger Revenues			Total Operating Expenses			Net Operating Income		
	1958	1957	% Change	1958	1957	% Change	1958	1957	% Change	1958	1957	% Change
DOMESTIC TRUNK												
American	$ 96,205,845	$ 68,993,819	0.3	$ 61,269,650	$ 61,214,259	0.1	$ 67,441,696	$ 67,054,782	0.6	$1,764,169	$1,939,037	— 9.0
Braniff	14,190,552	12,342,426	15.0	13,019,669	11,407,353	14.1	13,521,890	12,008,925	12.6	676,662	333,601	102.8
Capital	23,444,104	19,269,371	21.7	22,012,169	18,272,292	20.5	24,114,509	20,261,598	19.0	—670,405	—992,227	...
Continental	5,688,367	4,657,120	22.1	5,257,981	4,147,865	26.8	5,934,268	4,396,646	35.0	—245,901	260,474	...
Delta	21,505,441	19,521,623	10.2	19,690,633	18,039,612	9.2	21,346,986	18,108,344	17.9	158,455	1,413,297	—88.8
Eastern	65,326,305	66,820,424	—2.2	41,423,842	42,783,051	—2.2	60,735,668	59,855,581	1.5	4,590,637	6,964,843	—34.1
National	17,028,826	17,378,685	—2.0	15,597,473	15,930,806	—2.1	15,823,747	14,592,294	8.4	1,205,079	2,786,391	—56.8
Northeast	5,719,913	2,654,621	115.5	5,329,936	1,922,908	177.2	7,071,000	3,498,358	102.1	—1,351,087	—843,737	...
Northwest	12,340,486	10,829,455	14.0	10,760,727	9,427,531	14.1	14,449,598	12,248,291	18.0	—2,109,113	—1,418,836	...
Trans World	47,034,799	41,533,705	13.2	42,317,937	36,493,455	16.0	52,624,275	45,584,939	15.4	—5,589,476	—4,051,234	...
United	63,350,245	57,502,753	10.2	55,123,909	50,514,064	9.1	63,998,093	59,207,817	8.1	—647,848	—1,705,064	...
Western	6,216,339	9,362,083	—33.6	5,757,936	8,678,650	—33.7	6,945,661	8,322,680	—16.5	—729,322	1,039,403	...
TOTALS	$351,059,241	$330,866,085	6.1	$317,561,862	$298,831,846	6.3	$354,007,391	$325,140,155	8.9	—$2,948,150	$5,725,930	...
INTERNATIONAL												
American	$ 1,851,538	$ 1,720,285	7.6	$ 1,571,159	$ 1,443,236	8.9	$ 1,664,625	$ 1,493,329	11.5	$ 186,913	$ 226,956	—17.6
Braniff	2,024,023	1,908,730	6.0	1,749,400	1,382,560	26.5	2,033,081	1,615,095	25.9	—9,058	293,635	....
Delta	1,607,958	1,549,109	3.8	1,487,883	1,426,697	4.3	1,389,985	1,240,357	12.1	217,973	308,752	—29.4
Eastern, Overseas	5,454,180	3,901,009	39.8	5,168,192	3,749,095	37.9	4,518,705	2,849,010	58.6	935,475	1,051,999	—11.1
San Juan	3,930,944	3,621,822	8.5	3,719,800	3,484,807	6.7	3,113,065	2,607,694	19.4	817,879	1,014,128	—19.4
Bermuda	364,962	279,187	30.7	343,797	264,288	30.1	377,055	241,316	56.2	—12,093	37,871	....
Mexico	1,158,274	.....	...	1,104,595	.....	...	1,028,585	.....	....	129,689	.....	....
National	1,314,728	1,201,151	9.5	1,205,410	1,120,853	7.5	1,186,931	861,607	37.8	127,797	339,544	—62.4
Northwest	6,439,141	5,932,509	8.5	3,992,780	3,544,544	12.6	6,261,642	5,860,168	6.9	177,499	72,341	145.4
Panagra	5,039,270	5,106,081	—1.3	3,683,317	3,864,311	—4.7	4,774,823	4,703,596	1.5	264,447	402,485	—34.3
Pan American System	64,307,514	66,786,752	—3.7	47,787,412	49,386,358	—3.2	71,714,992	68,954,192	4.0	—7,407,478	—2,169,440	....
Non-Divisional	.....	—718	...	.....	.....	...	27,585	29,799	— 7.4	—27,585	—30,517	....
Latin America	22,448,983	22,263,577	.8	17,480,747	17,119,619	2.1	23,745,813	22,906,773	3.7	—1,296,830	—643,196	....
Atlantic	24,619,121	25,004,022	— 1.5	18,111,809	18,583,025	— 2.5	29,531,599	26,440,324	11.7	—4,912,478	—1,436,302	....
Pacific	16,612,994	18,609,208	—10.7	11,708,276	12,947,489	— 9.6	17,237,780	17,854,119	—3.5	—624,786	755,089	....
Alaska	626,416	910,663	—31.2	486,580	736,225	—33.9	1,172,215	1,725,177	—32.1	—545,799	—814,514	....
Trans Caribbean	172,840	.....	...	123,023	.....	...	196,736	.....	....	—23,896	.....	....
Trans World	12,509,255	10,569,088	18.4	8,828,114	7,527,641	17.3	17,087,044	13,810,317	23.7	—4,577,789	—3,241,229	....
United	2,793,667	2,723,125	2.6	2,522,461	2,561,523	— 1.5	2,724,283	2,604,875	4.6	69,384	118,250	....
Western	290,502	.....	...	283,295	.....	...	352,766	.....	....	—62,264	.....	....
TOTALS	$103,804,616	$101,397,839	2.4	$ 78,402,446	$ 76,006,818	3.2	$113,905,613	$103,994,546	9.5	—$10,100,997	—$2,596,707	....
LOCAL SERVICE												
Allegheny	$ 1,733,160	$ 1,476,919	17.3	$ 1,048,908	$ 951,359	0.3	$ 2,188,032	$ [illegible]19,859	14.0	—$454,872	—$442,940	....
Bonanza	1,130,215	784,016	44.2	685,114	461,718	48.4	1,101,170	[illegible],152	40.2	29,045	—1,136	....
Central	1,116,505	867,350	28.7	369,829	277,262	33.4	1,088,677	[illegible]4,785	11.7	27,828	—107,435	....
Frontier	1,678,872	1,537,939	9.2	948,862	759,279	25.0	1,736,154	1,570,452	10.6	—57,282	—32,513	....
Lake Central	907,284	719,835	26.0	432,589	319,876	35.2	956,990	786,796	21.6	—49,704	—66,961	....
Mohawk	1,858,874	1,436,413	29.4	1,232,844	1,105,622	11.5	2,145,862	1,855,824	15.6	—286,988	—419,411	....
North Central	2,609,630	2,054,479	27.0	1,836,925	1,537,323	19.5	2,999,571	2,244,058	33.7	—389,941	—189,579	....
Ozark	1,824,173	1,613,429	13.1	1,071,225	758,270	41.3	1,887,596	1,627,448	16.0	—63,423	—14,019	....
Pacific	1,514,055	1,221,845	23.9	1,002,287	815,148	22.9	1,660,393	1,406,392	18.0	—146,338	—184,527	....
Piedmont	1,920,605	1,729,989	11.0	1,184,915	1,003,118	18.1	2,086,750	1,935,344	7.8	—166,145	—205,355	....
Southern	1,121,777	1,005,799	11.5	585,537	504,833	16.0	1,235,185	1,081,318	14.2	—113,408	—75,519	....
Trans Texas	1,609,729	1,579,974	1.9	779,822	768,632	1.5	1,626,793	1,629,127	—0.1	—17,064	—49,153	....
West Coast	1,100,857	995,295	10.6	624,117	513,412	21.6	1,206,381	1,036,840	16.4	—105,524	—41,545	....
TOTALS	$ 20,125,738	$ 17,028,302	18.2	$ 11,802,974	$ 9,775,852	20.7	$ 21,919,554	$ 18,853,395	16.3	—$1,793,816	—$1,830,093	....
ALASKAN												
Alaska	$ 1,318,088	$ 1,199,696	9.9	$ 327,926	$ 280,545	16.9	$ 1,309,008	$ 1,412,506	—7.3	9,080	—$212,810	....
Alaska Coastal	264,090	249,879	5.7	122,902	105,721	16.3	336,001	301,602	11.4	—71,911	—51,723	....
Cordova	225,162	232,935	— 3.3	17,913	30,045	—40.4	219,135	268,765	—18.5	6,027	—35,830	....
Ellis	177,996	182,060	— 2.2	79,880	82,302	— 2.9	225,043	229,691	—2.0	—77,047	—47,631	....
Northern Consolidated	508,407	581,835	—12.6	127,430	124,586	2.3	535,985	639,795	—16.2	—27,578	—57,959	....
Pacific Northern	1,964,449	2,014,861	— 2.5	898,222	885,374	1.5	2,105,107	2,190,843	—3.9	—140,658	— 175,982	....
Reeve	366,428	207,012	77.0	133,291	75,737	76.0	382,760	225,192	70.0	—16,332	—18,181	....
Wien	736,729	780,400	— 5.6	113,198	96,860	16.9	833,757	986,596	—15.5	—97,029	—206,196	....
TOTALS	$ 5,561,348	$ 5,448,678	2.1	$ 1,820,762	$ 1,681,170	8.3	$ 5,976,796	$ 6,254,990	— 4.4	—$415,448	—$806,312	....
TERRITORIAL												
Caribair	$ 627,138	$ 549,581	14.1	$ 582,808	$ 506,868	15.0	$ 507,418	$ 448,474	13.1	$ 119,720	$ 101,107	18.4
Hawaiian	1,113,016	1,275,851	—12.8	927,902	950,235	— 2.4	1,336,294	1,280,175	4.4	—223,278	—4,324	....
Trans Pacific	451,108	440,403	2.4	379,179	383,608	— 1.2	546,007	523,613	4.3	—94,899	—83,210	....
TOTALS	$ 2,191,262	$ 2,265,835	— 3.3	$ 1,889,889	$ 1,840,711	1.7	$ 2,389,719	$ 2,252,262	6.1	—$198,457	—$13,573	....
HELICOPTER												
Chicago	$ 408,360	$ 240,338	69.9	$ 102,436	$ 19,503	425.2	$ 444,731	$ 268,502	65.6	—$36,371	—$28,164	....
Los Angeles	315,915	321,559	— 1.8	37,322	37,875	— 1.5	295,800	296,566	—0.3	20,115	24,993	—19.5
New York	548,191	439,098	24.8	113,817	91,773	24.0	596,710	606,811	—1.7	—48,519	—167,713	....
TOTALS	$ 1,272,466	$ 1,000,995	27.1	$ 253,575	$ 149,151	70.0	$ 1,337,241	$ 1,171,879	14.1	—$64,775	—$170,884	....

CONSECUTIVE ISSUES

37 Sperry Gyroscope Co.
33 McDonnell Aircraft Corp.
31 General Electric Co.
29 Reeves Brothers, Inc.
28 Flightex Fabrics, Inc.
Parker & Co.
Sinclair Refining Co.
25 The Goodyear Tire & Rubber Co., Inc.
24 Elastic Stop Nut Corp. of America
22 Paper Manufacturers Co.
21 Aeroquip Corp.
Instrument Associates
Jack & Heintz, Inc.
20 Greer Hydraulics, Inc.
19 Electrical Engineering & Mfg. Corp.
Nutt-Shel Co.
18 Bendix International Div., Bendix Aviation Corp.
17 Air Carrier Engine Service, Inc.
Bendix Products Div., Bendix Aviation Corp.
Air Associates, Inc.
Esso Export Corp.
Teco, Inc.
16 The Aerotherm Corp.
Breeze Corp.
Convair
Simmonds Aerocessories, Inc.
15 Airwork Corp.
American Air Filter Co., Inc.
Bendix Scintilla Div.
Boots Aircraft Nut Corp.
The New York Air Brake Co.
The Weatherhead Co.
13 AiResearch Mfg. Co., Div., The Garrett Corp.
Aircraft-Radio-Marine Export, Inc.
Thomas A. Edison, Inc.
12 Hartman Electrical Mfg. Co.
Twin Coach Co.
11 Vickers, Inc.
Weber Aircraft Corp.
10 Avica Corp.
The Cleveland Pneumatic Tool Co.
Hardman Tool & Engrg. Co.
Marquardt Aircraft Co.
Whittaker Controls Div., Telecomputing Corp.

Why Leading Aviation Companies Advertise in the Directory Year After Year

Advertising is seen constantly—

Key prospects in the Aviation Industry keep this personnel and procurement reference book close at hand . . . 5 days a week . . . 6 months of the year, until the new issue arrives.

You Take Advantage of True Economy—

A single copy of the Directory serves as many as 40 people as a constant source of reference . . . carrying your ad to a vast number of aviation buying influences time and time again.

Buyers are Really Users—

At $9 a copy, the WORLD AVIATION DIRECTORY is the highest priced directory in the industry . . . the best known insurance against waste circulation.

But most of all,
Because . . . ADVERTISING IN THE WORLD AVIATION DIRECTORY WORKS!

The Directory contains over 1,000 pages, names, and job titles of over 25,000 key personnel, 6,500 companies, thousands of products classified and cross indexed.

FALL-WINTER 1958 ISSUE, PUBLISHED OCTOBER, CLOSING SOON

WORLD AVIATION DIRECTORY
American Aviation Publications
World's Largest Aviation Publishers
EXECUTIVE, EDITORIAL, AND ADVERTISING HEADQUARTERS
1001 Vermont Avenue, N. W., Washington 5, D. C.

Regional Advertising Offices

NEW YORK: 17 EAST 48TH STREET—PLAZA 3-1100 • CHICAGO: 139 N. CLARK STREET—CENTRAL 6-5804 • CLEVELAND: 1422 EUCLID AVENUE—PROSPECT 1-2420 • DETROIT: 201 STEPHENSON BLDG.—TRINITY 5-2555 • WEST COAST: 8943 WILSHIRE BLVD., BEVERLY HILLS, CALIF.—BRADSHAW 2-6561 • WASHINGTON: 1001 VERMONT AVE., N. W., WASHINGTON 5, D. C. • TORONTO, CANADA: ALLIN ASSOCIATES, 12 RICHMOND STREET, EAST—EMPIRE 4-2001 • MONTREAL, CANADA: ALLIN ASSOCIATES, 1487 MOUNTAIN STREET—VICTOR 5-6898 • GENEVA: 10 RUE GRENUS, GENEVA, SWITZERLAND—TEL. 321044 • LONDON: THE AAP COMPANY, 17 DRAYTON ROAD, BOREHAM WOOD, HERTFORDSHIRE, ENGLAND, CABLE ADDRESS: STEVAIR, LONDON • PARIS: 11 RUE CONDORCET, PARIS (9E) FRANCE—

ENGINEERS

Positions of technical leadership available for:

DESIGN ENGINEERS

(Airplanes, Missiles and Helicopters)

For mechanical, structural, or electrical design assignments.

ELECTRONIC ENGINEERS

SYSTEMS:

Group Leaders and Senior Electronic Engineers required with minimum five years' experience. Need men capable of establishing requirements for, and supervising the development of, major and sub electrical and electronic systems—including check out equipment—for missiles and airplanes.

Flight Control Systems	Infra-red Systems
Communications Systems	Guidance Systems
Radar Systems	Navigational Systems

CIRCUIT & PRODUCT DESIGN

Senior and Junior Electronic Engineers needed for assignments in the design and development of:

Antennas	Electronic Packaging
Beacons	Airborne Digital Computers
Airborne Radar	Auto-Pilots

Missile & Airplane Check Out Equipment

STRENGTH ENGINEERS
SENIOR FLIGHT TEST ENGINEERS
WEAPONS SUPPORT ENGINEERS
THERMODYNAMICS ENGINEERS
SENIOR TEST ENGINEERS
SENIOR AERODYNAMICISTS
FLUTTER AND VIBRATION ENGINEERS
DYNAMICS ENGINEERS
HYDRODYNAMICS ENGINEERS
OPERATIONS ANALYST—MISSILES

Supervisory positions exist in several of these areas.

To secure more information about our company and our community, please complete and return the coupon below:

Name_____

Address_____

_____

Position Sought_____

Degree Held_____

Mail to: Raymond F. Kaletta, Dept. B
Technical Placement Supervisor
P. O. Box 516, St. Louis 3, Mo.

—MACareers Are Successful Careers!—

McDONNELL Aircraft Corporation

—WEST COAST TALK—

By Fred S. Hunter

North American Aviation's engineering test pilots, specialists in hot-rod fighters, are about to get an education in multi-engine jets. The entire contingent is to check out in the B-52, which NAA has on bailment at Palmdale, Calif., where it is being modified to carry the X-15 rocket research craft aloft. It has not been decided whether a company pilot or an Air Force pilot will be at the controls of the B-52 on the initial X-15 flight, but NAA will be ready to do the job. However, the X-15's launcher isn't NAA's only reason for qualifying its engineering test-pilot group on the B-52. NAA is looking ahead to the day when it will be flight-testing its own B-70. So, the program for its nine engineering test pilots also includes the supersonic B-58 as well.

• **Problem for sweepers**—They were testing out a high-powered, high-priced sweeper at the Los Angeles International Airport recently and, amid a scattering of nuts, bolts, rocks and other crud, someone tossed a hand wrench out on the apron. The sweeper picked up the crud, but not the wrench. Now the airport experts are wondering if there is no danger of carelessly dropped tools being sucked into jet intakes, or if the sweeper needs more oomph.

• **That's a lotta seats**—Every time we start adding up jet-age seats we get a little dizzy from the numbers. On the basis of present scheduling, it is reasonable to assume that American Airlines is planning four daily nonstops between Los Angeles and New York with Boeing 707s; TWA and United three each with their new jets. That's 10 trips at an average of 125 seats each, or a daily total of 1,250 seats in each direction. Cut back one schedule on each airline and you still have seven flights, or a total of 825 seats each way. Did you say you would like to be an airline sales manager?

• **Northrop faces renegotiation threat**—Los Angeles Regional Renegotiation Board's recommendation that Northrop Aircraft's 1955 fiscal year profits be considered excessive in the gross amount of $5 million represents the first time this company has been faced with the possibility of a renegotiation refund. Years through 1954 were cleared with no refund requested. If the regional board is upheld in Washington, the actual refund will be reduced to $1,938,000 by tax allowances.

• **300 'simple, inexpensive' sandwiches**—Pan American serves three meals eastbound and four meals westbound on its Polar Route flights, and this means up to 300 "simple, cold and inexpensive" sandwiches go aboard every plane to keep Economy passengers happy.

• **It's about time, too**—Air Force used to ship F-102 delta wings needing repair to the San Antonio AMA by rail. Now it ships them in C-124s by working out a cradle to secure the wing in flight, reducing travel time from days to hours. Empty crates are dismantled so they can be returned in other planes than the high-priority C-124s.

• **Speed merchants**—Looks as though Convair will have to be recognized as the real merchants of speed in jet transports. The Convair 880 is the fastest of the jetliners now being built and its proposed Model 600 turbofan will be 15 or 20 mph faster still. There are indications, incidentally, that Convair may be very close to a turbofan sale.

• **Pardon us**—Over the years, in this business, you become reconciled to typographical errors that sometimes make you look ridiculous. So we weren't too surprised in a recent column, to see that the JT4A-3, which is in the 15,000-pound thrust class, was the same as the J85, which is in the 2,000-pound class, but we'll bet P&W and GE were. And we do know how to spell Ed Schmued's name right, too. (AMERICAN AVIATION, June 30, 1958.)

• **This and that**—Lockheed has eliminated the dive brake from the Electra . . . North American will move its twin-jet UTX prototype to Palmdale for flight tests as soon as the GE J85 engines are received . . . GE also has confirmed J85 delivery dates which will permit first flight of Northrop's T-38 supersonic jet trainer by late 1958 . . . Curtiss-Wright delivers first production engine for the JetStar to Lockheed at Marietta in August.

CHECK DELTA FOR NON-STOP DC-7's

between all these major cities!

DC-7 service—including one-stop and express flights to these and other cities—accounts for about 50% of Delta's seat miles . . . one of the highest percentages in the nation. Delta's leadership will continue into the jet age with first units of a $75 million Jet Fleet being put into service to and through the South in the last half of 1959.

RADAR EQUIPPED

Delta AIR LINES

Delta flies to 60 cities in 7 countries

ATLANTA	NEW YORK, WASHINGTON, CHICAGO, CINCINNATI, MIAMI, JACKSONVILLE, BIRMINGHAM, NEW ORLEANS, DALLAS, HOUSTON
NEW YORK	HOUSTON, ATLANTA, WASHINGTON
WASHINGTON	BALTIMORE, ATLANTA, NEW YORK, PHILADELPHIA
CHICAGO	CINCINNATI, ATLANTA, MEMPHIS, NEW ORLEANS, ST. LOUIS, MIAMI
CINCINNATI	CHICAGO, ATLANTA, MIAMI
MIAMI	CHICAGO, JACKSONVILLE, ATLANTA, CINCINNATI
JACKSONVILLE	MIAMI, ATLANTA
BIRMINGHAM	DALLAS, FT. WORTH, ATLANTA
NEW ORLEANS	CARACAS, HAVANA, ATLANTA, DALLAS, CHICAGO, HOUSTON
DALLAS	BIRMINGHAM, ATLANTA, NEW ORLEANS
HOUSTON	ATLANTA, ST. LOUIS, MEMPHIS, NEW YORK, NEW ORLEANS
CARACAS	HAVANA, MONTEGO BAY, NEW ORLEANS
HAVANA	CARACAS, NEW ORLEANS, MONTEGO BAY

Braniff serves more major cities in the U.S.A. and South America ... than any other airline!

BRANIFF 30 ANNIVERSARY

BRANIFF International AIRWAYS

General Offices: Dallas, Texas

AIRTRENDS

Edited by Robert Burkhardt

New economy class fares are proving to be a powerful traffic stimulant on the North Atlantic. One airline has had to cancel its advertising because of the heavy initial flush of bookings. Another surveyed those passengers still specifying tourist seats—"asking to pay $113 for a hot meal"—instead of economy class and discovered that in every case, without exception, the passenger had not heard about the lower priced economy service.

Stimulated by the low fares, not to mention the widespread publicity resulting from the "battle of the sandwiches" earlier this year, total eastbound traffic across the North Atlantic in May jumped to 52,600 revenue passengers from 38,900 a year ago. First class passengers from 10,300 a year ago to 11,800 this May. Tourist class dropped sharply, from 28,500 a year ago to 9,900. And the economy class, which began only in April of this year, attracted 30,700 travelers.

Don't be surprised if more local service airlines follow the lead of Bonanza and combine a common stock sale with a government-guaranteed equipment loan. This works out very well for the carrier. In Bonanza's case, $4.3 million in notes were placed with a group of banks at 5½% interest, with a 90% government-guarantee.

The underwriters sold 470,000 shares of stock on the market for a total of $1,175,000. Underwriting commission was 10% and there were additional direct costs to Bonanza of about $33,000. Despite the poor state of the market, the underwriters thought enough of the stock to pay Bonanza $2,000 for an option to buy 40,000 shares at $2.75. Proceeds will be used to buy a fleet of F-27 prop-jets, whose operating costs will be appreciably lower.

You have to admire the audacity of the Flight Engineers. Not only are they engaged in a battle to the death with the powerful pilots union over the "third man" issue, but they have now taken on the angry young men who are campaigning for a new Federal Aviation Agency. Appearing before the House Commerce subcommittee, FEIA warned that "the Administrator, under the new bill, would in effect be a DeGaulle of the airways—Hero if you agree with him; Dictator if you do not." This because he "need not be reconfirmed in his appointment periodically and no term of office is specified."

TWA's new president, Charles Thomas, isn't likely to try any fancy innovations or institute any of his own ideas. There have been conflicts between Howard Hughes and former presidents because the prexies had ideas of their own and often these didn't jibe with those of Hughes. Inside dope is that, in his talks with Hughes, Thomas assured the TWA owner he would run the airline the way Hughes wants it run.

Hughes has long wanted a "front man," who rates in Washington, as a president. Thomas fills this bill. But TWA still lacks an operating executive who has full authority to make decisions and control costs. This lack doesn't seem to bother Hughes.

Unanimity minus one—that's what faced Boeing 707 customers early this month when they met with Boeing and CAA in Seattle to present their ideas on an inspection and overhaul plan for the big jets.

Only missing carrier was American. Last-minute efforts to gain industry unanimity reportedly failed when AA and Pan American were unable to resolve basic differences in their approaches to time scheduling of periodic inspections. Result: American will make a separate 707 proposal to CAA.

Some government transport economists believe the only place the airlines can look for new business is among the more than 90% of all intercity travelers who go by private auto. It has been generally overlooked, but in the past ten years the percentage of travelers using autos has increased more than the percentage of travelers moving by air.

In 1956, for example, 3.1% of all intercity travel was by air and 89.9% by auto. Last year, the percentage of total intercity travel moving by air was up .9 percentage point whereas the percentage by auto was up 2.8 points. Railroad share of

the market dropped from 3.5% to 2.5% in the same period.

What happened to a reported CAB decision on airline no-show plans? Rumor last week was that the Board was ready to announce approval of carriers' plans to continue reconfirmation and minimum time limits on ticket pick-up to Dec. 1. Also, CAB was going to defer decision on the move to drop the $3 no-show penalty as of August 12 and express concern that the airlines didn't have a substitute plan ready. But nothing was ever put out. Industry is wondering why.

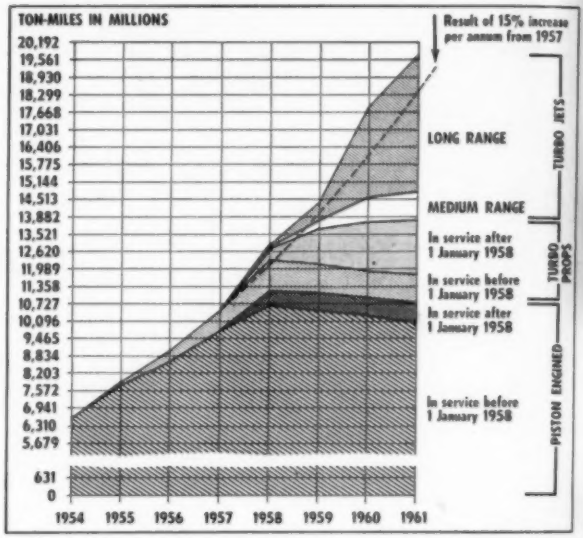
How broken up can a board be and still function? If the board is the CAB, answer seems to be: as many ways as there are members. This situation was proved last week when the "Board" decided to investigate fares between New York and San Juan. Chairman Durfee signed the Board's opinion and order. Members Denny and Minetti filed separate concurrences. Vice-Chairman Gurney dissented. And Member Hector filed both a concurrence and a dissent!

Look for complications in the repeal of the 3% excise tax on baggage and freight. Repeal is effective at the end of this month, but the Bureau of Internal Revenue has ruled that "no tax is payable on amounts paid after July 31, 1958, regardless of the fact that the transportation commenced before, on, or after such date."

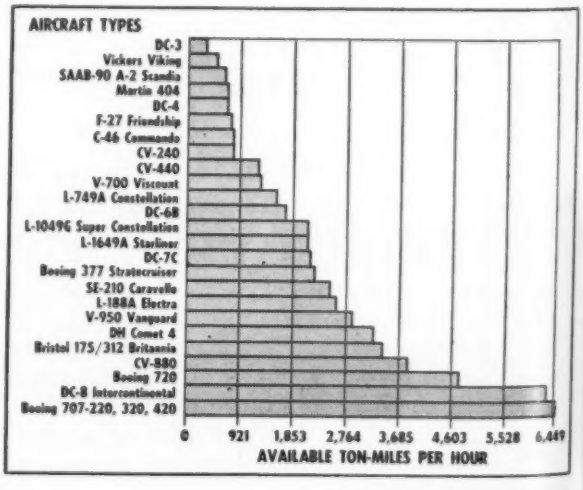
The new TWA-NWA around-the-world interline agreement has been hurt by currency and travel restrictions clamped on by the Philippine government the first of this year. In approving the idea of a two-carrier global service, the CAB hoped both companies would have an incentive to advertise widely and build new traffic. There has been some steady growth in revenue on the route, "but not up to expectations," say the carriers.

Last of an action-packed series of meetings among airline purchasing specialists takes place tomorrow (July 15) to give final approval to the new Integrated Data Processing purchasing system. (American Aviation, Jan. 27, p. 27).

Effort by carriers is regarded as a major "paperwork breakthrough" in purchasing. Biggest beneficiaries will be manufacturers who will be able to use a standard punch-card record system for all airline customers. An Air Transport Association specification giving full details will be issued shortly.



Booming capacity of world's airlines will exceed 19.8 billion ton-miles by 1961 according to statistics (above) developed by International Civil Aviation Organization. Note how piston transports account for 87% of capacity in 1958, will represent about 54% three years later. Statistics exclude Russia and Red China. ICAO table (below) reflects marked increase in transport productivity expressed in available ton-miles per hour per aircraft from the Douglas DC-3 through the Boeing 707.



NSTRUMENTATION

is new era of electronic missile guidance and identification has emphasized e importance of aircraft instrumentation, a field to which Hayes has made me outstanding contributions.

An example is a remote channel indicator developed by Hayes' native ent. This instrument shows an aircraft pilot the UHF channel to which radio is tuned although the radio may be in a position difficult for the ot to see. The first production prototype of Hayes Remote Channel In- ator passed all required tests, operated perfectly without a single change design. Thousands of these instruments now have been produced by Hayes the U. S. Armed Services.

Hayes has designed, prototyped, produced and installed thousands of ctronic kits for piloted aircraft. Hayes has had experience in research and gineering for a wide range of aviation instrument production. Inquiries are ited.

GINEE S, SCIENTISTS, NEEDED—Hayes n aircr ft modification, IRAN, and main- ance fa ity, including guided missile work. od pos ons are open for aircraft design neers, raduate engineering students, and onautic scientists. Write Personnel Direc- Depar nent 405, P. O. Box 2287.

Hayes
AIRCRAFT CORPORATION
BIRMINGHAM, ALABAMA

ENGINEERS • DESIGNERS • MANUFACTURERS

MERCURY SERVICE NEW YORK – LOS ANGELES

Widest choice of DC-7 nonstop flights

radar-equipped · reserved seats spacious lounge · superb cuisine
American's famous stewardess service

AMERICAN AIRLINES

America's Leading Airline

EAL Set to Battle Stiffer Competition

- **New CAB Florida route awards come at bad time**
- **First five months in '58 called 'bleakest in history'**
- **Recession, severe Florida winter, rising costs hurt**

by Eric Bramley
Chief News Editor

MIAMI BEACH—The 25th anniversary of Capt. Eddie Rickenbacker's association with Eastern Air Lines and its predecessors does not fall at a particularly happy time.

Along with the rest of the air, transport industry, EAL has its problems. It has gone through what one company official describes as the "bleakest five months in the company's history." When EAL, of all airlines, operates at a load factor of less than 50%—that's news. The load factor in May was 48.8%—eight percentage points under last year.

It's true that last year EAL carried more passengers than any airline in the world (8,867,000). But Rickenbacker says: "We paid a hell of a price for it." The company went into a big program of leasing planes from other airlines—an expensive proposition—to make certain it had its system blanketed with schedules.

The price of leasing these planes, plus crew salaries, insurance, maintenance and other costs, exceeded $10 million. Loads weren't up to expectations. This situation was one of the reasons for a big jump in EAL's cost of carrying a customer. In 1954, this cost was $26.01, falling to $25.57 in 1955, rising to $26.06 in 1956, and jumping to $28.66 last year.

• **It's a buyer's market**—Despite all these negative factors, the atmosphere was not gloomy at the recent semi-annual meeting here of the EAL advisory and field boards of directors. Rather, it reflected the realization that the company is going to have quite a battle on its hands. It's in what looks like a permanent buyers' market. The scrap is on for business and it seems safe to say that EAL's competitors are not going to find life too easy.

EAL's principal problems are:

• The recession, coupled with one of the worst Florida winters on record, caused traffic to nosedive.

• Upcoming competition, authorized by the Civil Aeronautics Board in the Great Lakes case. This will see first entry of TWA, Northwest and Capital into Florida. EAL describes this as "massive duplication" of its system.

• CAB's depreciation policy on piston-engined equipment.

A big plus factor is that EAL will be first with the Lockheed Electra. The first one will be delivered in October and a dozen of them probably will be in service by Christmas. By next July, the company will have all 40 of its turboprops.

A combination of salesmanship, customer service and this new equipment can put EAL in a topnotch position in less than a year, Board Chairman Rickenbacker believes.

The Captain, as he is known in EAL, is celebrating his 25th anniversary with the company. He joined North American Aviation, of which EAL was a part, in 1933. North American at that time was controlled by General Motors. In 1938, he and his financial associates bought control of EAL for $3.5 million, following attempts by Transcontinental & Western Air to buy the company from GM for $3,250,000. Since that time, EAL has been the most consistently profitable carrier in the business.

As the organization grew, the Captain sought to knit together his management group. This led to formation of the advisory and field boards of directors. The advisory board includes all officers and department heads, with the field board comprising the sales managers and station managers. These boards meet jointly twice a year in Miami Beach, with each session lasting a week.

Each board member reads a report of his activities since the last meeting, together with recommendations and suggestions. At the recent meeting, 363 reports were scheduled. All problems are brought into the open and thrashed out.

Later, a junior field board, including employes below the sales and station manager levels—reservations managers, counter managers, etc.—was formed and now meets twice yearly with the advisory board.

The Captain, who at 67 doesn't seem to slow down any, expresses himself bluntly on all subjects at these sessions. Samples:

Recession: "We're not having a recession. It's a 'correction'—a correction of manmade abuses. There's been greed, selfish interests. People want a quick buck and they don't want to work for it. Too many of you boys haven't had bumps. I've had bumps all my life. You've been in the habit of sitting back and waiting for a 25% increase in business every year—things have been too easy. All we had to do was to get more airplanes to carry the business. You've got to wake up and go to work."

Competition: "You've got a lot of it and you'll have more. I've been in the automobile business. They have no government protection. The world is their oyster. You've got to live with the competition—be prepared to do a better job than the other fellow."

• **Big push on for southern route**—Rickenbacker leaves no doubt that the top-piority effort to strengthen the EAL system will be to secure a southern transcontinental route. He and other officials have already visited all cities on the proposed route, drumming up interest and support in advance of CAB hearings.

He recalls that several years ago EAL was recommended for the route by a CAB examiner, but that the Board "botched it up in a big way—massacred it—and it came out as an interchange. Interchanges are no damn good—never have worked and never will.

"I've accomplished three of the four objectives I set 15 years ago—a Puerto Rico route, acquisition of Colonial Airlines and a Mexico City route. The fourth is the southern transcontinental, and this will probably be my swan song with Eastern."

EAL president Tom Armstrong told the meeting that it might seem that the company has had the "book" thrown at it—bad weather, recession, etc. "But the big book is still on the way—the competition awarded in the Great Lakes case. If we remember all we know about this business, the competition may find it hard to break in. We've been hit hard, but we're not even down on one knee."

In line with these remarks, the accent will be on a better sales effort and better customer service (EAL, at the suggestion of Bill Morrisette, v.p.-sales and

traffic, now calls its riders "customers" instead of "passengers"). Sales and service are counted on to make it doubly hard for the new competitors to break into territory in which they have never before operated.

• **New sales program**—As part of the intensified sales program, EAL has created a new post, general sales manager, and has upped seven divisional sales managers to assistant vice presidencies. Bill Westphal, former Atlantic division sales manager, was promoted to assistant v.p. and general sales manager.

Announcing the appointments, Rickenbacker said: "Our entire industry is engaged in a bitter struggle for traffic. We must develop new customers for air transportation if we are to survive without subsidy."

The Electra ("A much better airplane than I had hoped for," says Rickenbacker) will first be placed in service on the New York-Miami route. Principal reason for this decision is that the plane will be operating in and out of the big Miami maintenance base, in case there are "bugs" to be corrected. EAL now believes the plane will probably cruise at 410-415 mph.

Also revealed at the meeting was the unique arrangement EAL has worked out for overhaul and maintenance of the Electra's Allison 501-D13 engines and Aeroproducts propellers. If EAL's overhaul cost on the engine exceeds $9.80 per hour of operation, Allison will reimburse the airline for all expense over that figure. The same deal applies to the propellers, at $1.60 per hour of operation.

On maintenance, Allison will reimburse EAL for all costs above $5 per hour of engine operation, and 50¢ on propellers. If maintenance costs are *below* these figures, EAL will reimburse the manufacturers. In view of these arrangements, the need for accurate keeping of records on labor and material was stressed at the meeting.

• **Hits CAB's depreciation policy**—If EAL is somewhat bitter about new competition, it feels even more strongly about CAB's new depreciation policy on piston-engined aircraft. Tom Creighton, treasurer, explained that this policy requires that planes be depreciated over a period of seven years, with a 15% residual value plus one complete overhaul. EAL's policy was to depreciate in four years with about 5% residual value.

EAL showed a net after taxes of $3,620,000 for the first four months of 1958, but Creighton described this as a "bookkeeping" profit. If the books had been kept in the same manner as last year, net from operations would have been only $284,000. Because of the CAB policy, $2,411,000 less was charged to depreciation in the first four months. In addition, EAL has always maintained a reserve of 5% of revenues for advertising and publicity expense. This was reduced to 4% this year. Thus, another $925,000 should be deducted from profit. This left $284,000.

Then, Creighton added, the passenger fare increase brought in $1,536,000 after taxes this year, and if this were deducted the company would have shown a $1,252,000 loss. The profit, he reiterated, was because of bookkeeping and the principal cause was the depreciation policy.

Because of this policy, EAL says it will have $14 million still tied up in its 48 DC-7Bs in 1965. Under EAL's four-year plan, it would have had only $3.4 million in the planes in 1962.

• **Will have to borrow $80-100 million**—Says Rickenbacker: "We should be able to depreciate in two years. There's nothing so cancerous as having money tied up in obsolete book value. Destroy the old and buy the new—that's the key to progress. Today I wouldn't take a piston-engined airplane as a gift."

He adds that with money tied up in piston planes he'll now have to borrow considerably more money than originally planned. "I'll have to borrow another $80 to $100 million—if I can. I don't know yet."

The industry's chances of getting rid of this CAB policy have improved recently. In a related case, involving depreciation of spare parts and equipment, the U.S. Court of Appeals said CAB has no authority to regulate such depreciation charges. This will have a definite bearing on the seven-year airplane depreciation case, now pending in District Court.

Eastern Air Lines Sidelights

Miscellaneous items of interest reported at the meeting included:

• EAL's new terminal at New York International Airport, to open in March 1959, will cost more than Miami Beach's plush Fontainebleau Hotel.

• The company's costs at LaGuardia, Newark and New York International airports last year were $2.5 million, or $1.67 per passenger.

• Interline revenues in the first quarter of 1958 were up 10% to $15,850,000 and now comprise 24% of total revenue.

• For the first time in years, sales by travel agents were down, dropping 2% to $24,410,000 for the January-April period.

• Provisioning for the Electra will add 12,000 parts to stock.

• In 1957, EAL spent $4.5 million on newspaper advertising, $830,000 for radio and TV, $200,000 for sales promotion, and $1,110,000 for special promotions and public relations, for a total of $6,640,000.

• An aileron for the Electra will cost $6,100, compared with $4,455 for the DC-7B. A rudder assembly will cost $6,764 against $4,158. And a main landing gear assembly runs $29,400 against $8,258.

• In the November-April period, EAL mishandled 34,856 pieces of baggage, or 7.9 per 1,000 customers handled.

• In reporting food expense, EAL separates the cost of feeding customers and the cost of feeding flight crews. In the first quarter of 1958, customers consumed 768,000 meals costing $1,754,400. Crews ate 135,279 meals costing $232,705. Total food expense in 1957 was $7,458,900. EAL now has 274 regular meal flights daily.

• Average length of service of the company's 102 station managers is 15½ years.

Equipment Problem

But bright future is seen for international air cargo

The untapped potential in international air cargo, even with present-day aircraft, is so vast as to stagger the imagination, according to Stanley H. Brewer, professor of Transportation for the University of Washington.

It will be a long time before air carriers realize the full potential of international airfreight, the professor said. But there would be real progress between now and 1965.

In a study prepared for Boeing Airplane Co.'s Transport Division, Brewer forecast a rate of growth for U.S. international air cargo of from 27% to 32% per year, for the period from 1961 through 1965. For the year 1961, he estimates air carriers will haul some 767 million ton-miles of international air cargo. By 1965, the figure will have risen to 2,180 million ton-miles.

The study, titled *U S. International Air Cargo Future*, points out that air cargo potential is greater in the international market than in the domestic because of the longer distances to cover and the slower speed of competing forms of transportation.

A primary assumption in the report is that U.S.-international trade will

continue at a level well above a 1,000 billion ton-miles. The potential for air cargo is from 1% to 2% of the total—or 10 to 20 billion ton-miles a year. The value of products, their perishability, fragility, the size of shipments and the desire or need for speed or flexibility of transport, were considered by Brewer in estimating the potential.

The most important factor is equipment—aircraft capable of carrying a decent payload the distances necessary to span oceans. Such planes are just now becoming available. With these planes, operating at normal load factors, and even with rates somewhat lower than at present, airlines could show a profit.

The re-equipment programs many airlines have under way should help matters appreciably. Jet aircraft will provide some needed capacity. More important, the jets will free some of the newer, larger piston-engine planes for all-cargo work. Small shipments in both short and longhaul operations are excellent prospects for combination aircraft operating on a scheduled basis, the report says. But the longhaul, high-volume business can only be handled in an all-cargo airplane.

As additional planes become available (possibly some to large irregular carriers) competition for freight movements in the international market will become more intense. This should bring about greater sales efforts and a reduction in rates, all of which should hasten the development of international airfreight traffic.

The Baggage-Handling Bugaboo

by Robert Burkhardt
Transport Editor

The stocky man in the battered grey fedora was busy talking to the ticket agent, but this didn't stop the indignant passenger from interrupting.

"Captain Rickenbacker?" he asked sharply.

The Eastern Airlines board chairman looked at the obviously angry passenger and nodded. "What's wrong?"

"This briefcase." The slightly built passenger pointed to a leather dispatch-case. "They say I have to pay an excess baggage charge on it even though I'm going to take it on the plane with me. Why?"

Captain Eddie laughed. "What's in it that makes it so heavy?"

"Orders from my customers," the passenger said proudly. "I'm president of a clothing company; been all around the country showing our Fall line; now I'm headed back to New York with the good news."

"I see," the Captain said thoughtfully. "Now tell me something. After you had closed your sale with one of those customers, what would you think if he suddenly demanded that you give him something extra—like a scarf, maybe—with each garment? If you did it might even wipe out all your profits on that sale?"

The traveler paused and looked down at his bulging bag. "I get it . . . I get it," he said. "But why should a small man like me pay an extra baggage charge when both myself and my bags together don't weigh as much as some of your stout customers?"

"Because we work on the average weight," the Captain said. "Just the way you do. A size 16 shirt costs your customers the same as a size 14; even though there's more cloth in some, you price on the average. So do we."

This small incident—a true one—points up a growing problem for the airlines. Baggage regulations are imperfectly understood by even the most experienced of travelers. With more an more people flying, baggage handling and excess baggage charges are a matter of increasing concern.

In an effort to at least partly meet this problem, both TWA and PanAmerican have small booklets they give their overseas passengers.

Neither airline is quite prepared to face one of the real problems of airline baggage handling: the bag itself. "Anything you can do to sell the public on buying less fragile luggage would be very helpful to us," a PanAm official told me.

One solution to the problem, under consideration by several air lines, is the pre-loaded container. In PanAm's case, this has been discarded for several reasons, one being the weight penalty of the additional container. Another is an airplane designed to speed up and simplify baggage handling—all of the new jets have been carefully engineered to fill this requirement.

In the Boeing 707, for example, two of the improvements are a baggage compartment with room for the attendent to stand up and stow luggage (in present equipment the baggage must be slid or thrown, or pushed along a tunnel and jam-packed in), and benches for the luggage to sit on (rather than be stowed on its side or corner, because of the rounded floor panels).

Even so, a traveler will always be wise to use the most sturdy handbag he can find, and, if at all possible, to stick to a single piece of luggage. How is this possible on a long overseas flight, particularly for a lady who must carry a change of clothes for the various occasions?

One solution is offered by a long experienced world traveler: Miss Frances Knight, director of the State Department's passport office (see below).

Even the most careful traveler may be faced with problems requiring payment of excess baggage charges. PanAm has learned to be surprised at almost nothing, particularly on its South American flights. On the Brazil run, for example, electronic equipment is a recurring "excess baggage" problem. If TV tubes are taken into Brazil as part of hand luggage, there is no duty charged. If they are shipped in as express or freight, an import duty is collected.

In addition to Brazil, travelers to Venezuela and Columbia can be counted on for a considerable amount of excess baggage. This results from the fact that regular express and freight shipments to the interior of these countries is a lengthy, hazardous and expensive process. In addition, an air passenger's baggage is subject to fewer clearance formalities.

As a result, it is not at all uncommon to see a passenger bound for one of these countries carrying a refrigerator or other major U.S. purchase as "baggage."

Miss Knight's Tips to Travelers

- ***Packing for a long trip takes careful planning and coordination.***
- ***Set out bag a week before and start putting in essentials, i.e., toothbrush, toothpaste, comb, flashlight, travel alarm clock, etc.***
- ***Wear one set of underclothes, pack another—both should be of drip-dry fabric. Take detergent in envelopes—one tablespoon in each envelope, one envelope for each night away.***
- ***Also pack a combination pajama-robe-slipper set of drip-dry fabric.***
- ***Dark, wash-and-wear clothing is most practical.***
- ***Take two pairs of extra shoes, pack stockings, belts, etc. inside shoes.***
- ***I usually take a small travel iron . . . convertible for use in foreign countries and a small sewing kit for emergencies.***
- ***Most people overpack and find they have more with them than they can use. It is not necessary to be overburdened with extras.***

What's Behind Airline Labor Strife

by Gerald Fitzgerald
Airline Economics Editor

The introduction of newer and faster airliners has always been preceded by sticky labor negotiations trying to set terms to cover their operation. The reason: it's hard to see beforehand what changes the new planes will bring with them. Management and labor bargainers alike must try to fix terms to protect themselves from any disadvantages that can come with the change, and more—as much more as possible—for protection against the unexpected.

Thus it is with the new jets. So much of the future is still cloudy that the gap between what management thinks it can afford and labor's idea of the least it can ask for is wide. Contract talks on most lines over the past year have run into some real jet barriers; the more comprehensive and revolutionary the equipment change is to be, the more difficult is the barrier to cross.

The significance of this problem is, perhaps, best illuminated when one considers that five White House Emergency Fact-Finding Boards have been appointed to help work out airline disputes. This becomes doubly significant when it is placed against the background of this Administration's long-time policy of non-intervention in labor-management skirmishes.

• **Even Eastern is on spot**—Even on airlines with histories of relative labor peace, this thorny problem has pushed up its head—principally in the cockpit. Eastern Air Lines, long known for its amicable pilot-company relations, last winter required the help of the second of five presidential boards to assist in working out a pilot contract. Shortly afterwards, EAL got another to help work out a flight engineer agreement. The two cases, though separate, were combined and public hearings lasted from late February through early June. The issues were so complex that, even after two 30-day extensions were granted, the Board needed still another extension to work out helpful recommendations and an intelligible report. These are now due before July 27.

Those who attended the EAL hearings, particularly those considering the pilots' demands, could sense an atmosphere of strain—as if the company, the pilots and the engineers were a little embarrassed to be airing their quarrel before outsiders.

Explanation for this probably was best described by Air Line Pilots Association President Clarence Sayen on the opening day of the pilots' case in New York. Sayen said at the time, almost sorrowfully, that "in 18 years of contractual relationship between my association and Eastern Air Lines, there has never been a case even gone to mediation. We have been able to work the problems out across the table without government assistance or assistance of any kind."

Sayen cannot say the same for his negotiations with other airlines, to be sure, but the need for Federal assistance to work out a pilot contract at Eastern—often called the "pilots' airline"—lends some substance to the belief that extraordinary conditions prevail this year in labor negotiations within the airlines.

• **Jurisdictional fight is key**—It is important to understand the motive that led to the call for White House aid. The Flight Engineers International Association announced it would strike unless the company agreed to a contract provision requiring mechanic-trained flight engineers aboard future EAL jetliners. The pilots, at the same time, were demanding a similar provision in their contract guaranteeing that the flight engineer would be pilot-trained.

The conflicting demands cropped up in negotiations with other airlines when the National Mediation Board unexpectedly called for help. Since then, there have been two other disputes, at Trans World Airlines and at American Airlines, serious enough and similar enough to warrant equal attention. In addition, six airlines—Eastern included—and the International Association of Machinists are involved in other disputes that have reached the White House.

The jurisdictional fight between ALPA and FEIA has received wide publicity all over the country. It is the most crucial issue before a White House board now, and the immediate cause for much of the slow motion in settling flight crew contracts this year. However, it's only part of the trouble.

Presumably, the major jet-age development influencing labor union policy is the prospect that the airlines will be able to carry more traffic than they now do with fewer airplanes. American Airlines, according to currently available data, now operates about 195 aircraft. Last fall, AA president C. R. Smith predicted that by 1961, when the jet re-equipment program is complete, the carrier's fleet will be down to some 120 planes.

That's quite a cut and it understandably has flight crew unions worried. Pilots stand to lose the most. Consequently their protective bargaining efforts have been the strongest. Proposed solution to this problem is to raise substantially the pay rate of the individual, but cut down on his working hours. The union reasons that the company pays out about the same amount in wages; the employe takes home nearly the same; and technological change is not allowed to force large-scale layoffs.

Flight crew pay formulas presently are tied in closely with the type and productivity of the aircraft flown. These formulas include elements that reflect aircraft speed and weight. Management, trying to hold down steadily increasing operating costs, is campaigning to break the present pay formula. Pilot pay now ranks second only to the cost of fuel as the greatest item of aircraft operating expense.

Conceivably, some managements in-

SPECIAL NOTICE...

The first section of the completely new

Spares and Replacement Parts Catalog

featuring the ADAMS-RITE line of aircraft interior hardware,

IS NOW AVAILABLE

ADAMS-RITE manufactures the world's most widely known line of manually operated aircraft hardware. The new catalog, when completed, will carry specifications on some 700 items which include locks, latches, handles, tie-down fittings and sanitary valves. To simplify your selection from this *specialized* yet *standardized* line for military, commercial or private aircraft, the catalog will include detailed line-drawing illustrations and comprehensive maintenance, overhaul and spare parts information.

Write now, advising us of your requirements and be one of the first to receive this new, free catalog. AA-78

ADAMS-RITE
MANUFACTURING CO.
5540 West Chevy Chase Drive, Glendale 4, Calif.

dicate, with the tremendous increase in speed and capacity the new jets will afford, flight crew pay, particularly pilot pay, could approach or even surpass that of top management. Pan American World Airways recently estimated that current ALPA demands, if met, would net some captains as much as $45,000 a year. This figure would assume the same number of flying hours as are now flown.

Current labor strategy, first of all, depends on the retention of the present pay formula. Starting from that point, the unions are seeking to broaden the flight pay concept to include more time on the ground. In previous negotiations, the principle was established on many airlines that a flight crew member should be compensated for the time spent on duty, for which he didn't receive flying pay.

The idea then was to fix a relationship between flight time and duty time so that a man could count on getting a reasonable amount of flight time (the basis for his wages) for the time he spent on duty. Formulas such as the so-called "3-4-5" formula resulted.

Under this arrangement, three hours of pay and flying credit were guaranteed for a duty period of from four to eight hours; four hours' pay and credit for 8-12 hours on duty; and five hours pay and credit for 12-16 hours on duty. The formula, of course, only established minimums, so that a pilot would be credited for any flight time in excess of that produced by the 3-4-5 relationship.

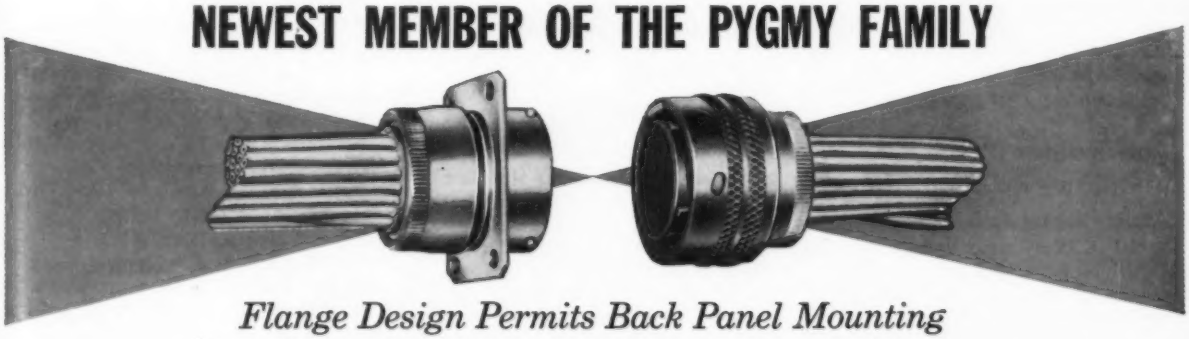
• 'Featherbedding,' say managements— The attempt now is being made to broaden this idea to treat as duty time all the time spent away from home. The result of this couldn't help but reduce the hours spent in the cockpit, while still giving the crew member credit for approximately the same number of flying hours. This, to a large measure, has been the demand termed by managements as "featherbedding."

Flight crew unions are also becoming increasingly pension-conscious. Plans on most lines now are in two parts—a fixed benefit, noncontributory plan supplemented with a variable benefit, contributory plan. The former would provide, at no cost to the employe, a fixed monthly income upon his retirement; the latter, whose cost would be shared by company and employe, would bring in additional monthly income based on prevailing economic conditions. This protects the retired employe from the evils of inflation, the secondary benefit being derived as it is from an investment fund. This pension plan is popular.

The flight time-duty time issue, from all indications, is a more serious one with ALPA in its negotiations. FEIA gave ground on this in at least three recent settlements— at Pan American, American and Western. The pilots, however, are considerably more reluctant to compromise on this issue, mostly because they are more vulnerable to jet-age personnel cutbacks than are the flight engineers.

But all of this and a great deal more is now before the President's panel. Members David Cole, Saul Wallen and Dudley Whiting, however, have a difficult and complex set of cases to solve. With the vast forest of issues before them, their job—to recommend solutions that will placate the parties involved and at the same time consider the needs of the industry—seems almost impossible.

BENDIX "SP" ELECTRICAL CONNECTOR— NEWEST MEMBER OF THE PYGMY FAMILY



Flange Design Permits Back Panel Mounting

The new Bendix* "SP" connector uses an alumilite finish offering superior resistance to abrasion and corrosion. Flange size and location designed to permit back panel mounting with No. 6 screws. Other outstanding features of the new connector are similar to those of the well-known "PT" type.

- Safety wiring completely eliminated
- Mechanically assisted coupling and uncoupling through cam action
- Closed entry, probeproof socket contacts
- Visual and audible inspection of coupling—perfect for "blind" locations
- Three-point bayonet lock; perfect axial alignment of mating parts at all times
- Constant spring tension behind mated insert faces
- Five-key polarization—positive protection against mismating or cross-plugging
- Resilient inserts, performance-proven in millions of Bendix connectors
- Heavy gold plating over silver on all contacts
- Both pin and socket contacts machined from high-grade copper alloy
- Machined bar stock or impact-extruded shell components
- Alumilite finished to resist abrasion and corrosion—no thread wear—easily withstands 500 hours of salt spray

With the introduction of "SP" Pygmy Electrical Connectors, Bendix again demonstrates its well-known policy of anticipating the needs of industry.

Export Sales and Service: Bendix International Division, 205 East 42nd St., New York 17, N. Y.
Canadian Affiliate: Aviation Electric, Ltd., 200 Laurentien Blvd., Montreal 9, Quebec

*REG. TRADEMARK

Scintilla Division
SIDNEY, N. Y.

Bendix
AVIATION CORPORATION

Circle No. 2 on Reader Service Card.

John B. Andersen

Ryan Aeronautical Co. Photo
Charles G. Habley

Andersen Back at Capital As Public Relations Chief

John B. Andersen has returned to Capital Airlines as public relations director. Andersen was with Capital for 11 years, until 1956, when he moved to McCann-Erickson, Inc., a New York advertising agency.

He replaces Jennings Randolph, who resigned from the airline in June to campaign for one of West Virginia's seats in the U.S. Senate on the Democratic ticket.

While he was with McCann, Andersen handled accounts for Vickers Ltd. and Trans-Canada Air Lines. When he left Capital in 1956, he was sales promotion manager.

Ryan Names Habley To Military Relations Job

Ryan Aeronautical Co. has appointed Charles G. Habley to the recently created position of director of military relations. With nearly 25 years' experience in the aircraft industry, Habley comes to his new post from Lockheed Aircraft Corp., where he was a military sales representative.

Habley is an engineering graduate from Massachusetts Institute of Technology. He began his aviation career in the 1930s with Boeing Airplane Co. After 13 years with Boeing, he joined the Rand Corp., as executive assistant aircraft director, and later was made Dayton, Ohio representative for Rand. From the Rand Corp., Habley went to Lockheed, where he worked for 4½ years.

People on the move in . . .

. . . Transport

John E. Brady has joined American Airlines as director of advertising. Succeeding **Sheppard Spink,** Brady comes to the airline from Donahue and Coe, Inc., a New York advertising agency.

Vernon N. Ferguson has been named vice president of operations for L. B. Smith Aircraft Corp. He was formerly vice president for operations with Temco Aircraft Corp., and prior to that worked with North American Aviation.

Aaxico Airlines has appointed **Peter T. Craven** as executive assistant to company president Howard J. Korth. Craven was formerly a vice president with Riddle Airlines.

Maurice B. Westphal will head Eastern Air Lines' recently reorganized sales staff in his new position as general sales manager. Also at Eastern, Graydon Hall has been promoted to division sales and traffic manager for the midwest. Hall was previously Atlanta, Ga. district sales manager for the airline.

. . . Manufacturing/Military

George A. Lagassa has been named vice president for manufacturing of Titeflex, Inc. He was formerly division general manager at the Elbeeco division of Aeroquip Corp.

J. H. (Dutch) Kindelberger, board chairman with North American Aviation, Inc., has received an honorary Doctor of Laws degree from Howard University, Washington, D.C.

Karl Fritsch has been named chief development engineer at Vertol Aircraft Co. (Canada) Ltd. Most recently with Walter Kidde Co., Fritsch has worked both in the aircraft industry and with the airlines.

United Aircraft Corp. has named **Martin F. Burke,** a 27-year veteran with the company to the newly created position of vice president for industrial relations. Burke's former position as personnel director has been filled by **Morgan R. Mooney.**

Temco Aircraft Corp. has appointed **Thomas Courtney** as chief project engineer. Courtney comes to Temco from McDonnell Aircraft Corp., where he was a design research specialist.

Research and development work on the $65,000,000 Subroc anti-submarine missile will be directed by **R. L. Burtner.** The Goodyear Aircraft Corp. official formerly worked as project manager for the Mace surface-to-surface missile.

C. R. Knight has been named to head the newly formed Research Corp., subsidiary of Aeronautical Radio, Inc. Knight formerly headed the Arinc reliability research department.

Fred C. Burton has been named personnel manager for Kaman Aircraft. He was formerly head of security and plant protection.

Floyd A. Ricard has received the Meritorious Civilian Service Award and the award for Sustained Superior Performance of Duty for his work as chief advisor and consultant to the Army chief of transportation.

HAVE YOU TRIED...

FLIGHTEX GLASS CLOTH

FLIGHTEX FABRIC
WORLD'S PREMIER AIRPLANE FABRIC

FLIGHTEX FABRICS, INC.
93 Worth Street • New York 13, N. Y.
Leading Manufacturers of Fabrics and Tapes for the Aircraft Industry

Circle No. 4 on Reader Service Card.

THE BULLETIN BOARD

Undisplayed Advertising: $2.00 per line, minimum charge $6.00. Cash with order. Estimate 30 capital letters and spaces per line; 40 small lower-case letters and spaces per line. Add two lines if Box Number is included in lieu of advertiser's name and address. **Displayed Advertising:** $20.00 per column inch. Space units up to full page accepted in this section for classified-type advertising. Forms close three weeks preceding date of issue. Address all correspondence to Classified Advertising Department, American Aviation Publications, 1001 Vermont Ave., N.W., Washington 5, D.C.

SERVING THE INDUSTRY AS SUPPLIERS OF DOUGLAS PARTS AND COMPONENTS

FARRAR AVIATION

WE SOLICIT OPEN ACCOUNTS FROM WELL-RATED FIRMS

One of the world's largest inventories of DOUGLAS DC-3 & DC-4 PARTS

325 WEST MAIN STREET P. O. BOX 113 ONTARIO, CALIF. YUkon 6-6746 CABLE ADDRESS "FARRAIR"

FARRAR AVIATION WUX
State Dept. Export Reg. No. 4428

Situations Wanted

EXECUTIVE PILOT AVAILABLE to set up flight operation for growing business organization. Currently commissioned pilot in USAF (Captain). Civilian experience with two commercial airlines as Co-Pilot and Reserve Captain. Hold highest CAA qualifications (single and multi-engine). College graduate (B.S. Business Administration). Age 35, married; excellent personnel relations at all levels. Complete resume upon request. Interviews can be arranged. Box 157, AMERICAN AVIATION Magazine, 1001 Vermont Ave., N.W., Washington 5, D.C.

LOOKING FOR TROUBLE

to shoot in Sales, Pax Service or Public Rel. is creative, versatile Airline Executive with exceptional international background. Age 38, now employed, would relocate. $8,200.
Box 160, AMERICAN AVIATION Magazine
1001 Vermont Ave. N.W.,
Washington, D.C.

FOR SALE

DC-4's

B & E Models
Fully Convertible
Overseas & Domestic
Financing Available

United States Overseas Airlines Inc.
Chrysler Bldg., New York, N. Y.
Telephone YUkon 6-6685
Cable: USOALINES NEW YORK
TWX NY 1-3486

INVESTOR—Interested in airport, airplane distributorship, airplane manufacturer, etc. Include all past data and future possibilities in first reply. **Write Box 159, AMERICAN AVIATION Magazine, 1001 Vermont Ave., N.W., Washington 5, D.C.**

AN FITTINGS & HARDWARE
Stainless, Aluminum, Brass, Steel All sizes—immediate delivery from world's largest shelf stock. Buy direct from manufacturer. Lower prices—quicker service. Send for free wall charts showing complete line of AN & MS fittings and hardware. We machine parts to your own print; also, we sell AN & MS Forgings.
COLLINS ENGINEERING CORPORATION
9060 Washington Blvd., Culver City, California

THE SKYMOTIVE STORY
Complete . . . YES
COMPLETE AIRCRAFT SERVICES
kymotive
O'HARE FIELD CHICAGO

NICOPRESS
ONE TOOL HANDLES
3/32", 1/8", 5/32", 3/16", 1/4" cable
Wholesale cost $132.00
Unused $50.00 per Set
H. L. Boggess & Sons, Liberty, Missouri

WRIGHT 1820-76A
Newly overhauled by Grand Central Aircraft Co. to latest Learstar specifications.
ROBERT A. DARNALL
LINDEN AIRPORT LINDEN, N. J.

For SALE or LEASE
the NEW
SUPER 46 "C"
Passenger or Cargo Transport
MGTO Weight: Cruising Speed:
50,100 lbs. 235 MPH
Financing Available
L. B. SMITH AIRCRAFT CORPORATION
P.O. Box 456 MIAMI 48, FLORIDA

ADVERTISERS INDEX

Adams-Rite Mfg. Co. 56
Agency—West-Marquis, Inc.
AiResearch Mfg. Co., Div. of The Garrett Corp. 18
Agency—J. Walter Thompson Co.
Allison Div., General Motors Corp. 5
Agency—Kudner Agency
American Airlines, Inc. 52
Agency—Lennen & Newell, Inc.
Beech Aircraft Corp. 42
Agency—Bruce B. Brewer & Co.
Bendix Aviation Corp., Scintilla Div. . . . 57
Agency—MacManus, John & Adams, Inc.
Braniff International Airways, Inc. 48
Agency—Potts Woodbury, Inc.
Bristol Aero Engines Ltd. 36, 37
Agency—Young & Rubicam, Ltd.
Bulletin Board (Classified) 59
Canadair, Ltd. (A Sub. of General Dynamics Corp.) 14
Agency—Walsh Advertising Co., Ltd.
Chandler-Evans 63
Agency—G. F. Sweet & Co., Inc.
Continental Air Lines, Inc. 25
Agency—J. Walter Thompson Co.
Delta Air Lines 47
Agency—Burke Dowling Adams, Inc.
Fairchild Engine & Airplane Corp. 1
Agency—Gaynor & Ducas, Inc.
Flightex Fabrics, Inc. 58
Agency—The Powerad Co.
Hayes Aircraft Corp. 51
Agency—Silver & Douce Co., Inc.
Kaman Aircraft Corp., The 2
Agency—Charles Palm & Co., Inc.
LaVezzi Machine Works 29
Agency—R. W. Sayre Co., Adv.
Lear, Inc. 35
Agency—General Advertising Agency
Lockheed Aircraft Corp. 26, 27
Agency—Foote, Cone & Belding
Martin Co., The 40, 41
Agency—Vansant, Dugdale & Co., Inc.
McDonnell Aircraft Corp. 46
Northrop Aircraft, Inc. 13
Agency—West-Marquis, Inc.
Pan American World Airways, Inc. . . . 32-33
Agency—J. Walter Thompson Co.
Phillips Petroleum Co. 64
Agency—Lambert & Feasley, Inc.
Republic Aviation Corp. 17
Agency—deGarmo Incorporated
Rolls-Royce, Ltd. 23
Agency—The Wesley Associates, Inc.
Smith, Barney & Co. 29
Agency—Albert Frank-Guenther Law, Inc.
Temco Aircraft Corp. 30
Agency—Rogers & Smith
Vinson Mfg. Co. 6
Agency—Welsh-Hollander Adv.
Wausau Iron Works, Inc. 43
Agency—R. C. Breth, Inc.
Western Airlines, Inc. 8
Agency—Batten, Barton, Durstine & Osborn, Inc.
Westinghouse Electric Corp. 10, 11
Agency—Fuller & Smith & Ross, Inc.

EN ROUTE

by Wayne W. Parrish

You Pays Yer Money...and You Takes Yer Choice

This page is read in almost every country of the world. As a result, I get some very interesting and sometimes strange reactions to my off-the-cuff and off-beat observations of the peoples and customs and oddities of this tired old globe.

Take the article I did some weeks ago on New Zealand, about the gal barging into my room at dawn with morning tea when I thought the door was firmly locked, and about some gal criticizing my table manners, and the dreary breakfast ceremony in a N.Z. hotel.

I haven't heard from a New Zealander yet, but I did get two letters from Englishmen, one living in Wellington, N.Z., and the other in London. One berated me, the other said he got some hefty chuckles.

I won't name either one of them, but here is what the critic in Wellington said in part:

"After I had read the article I could only say to myself, 'What a confounded cheek the man has,' for in this article he takes strong exception because he was criticized by one of us on the way he handled his knife and fork at meals, and yet the remainder of the article is extremely critical of our habits.

"You don't like being wakened at 6:30 a.m. with a cup of tea. So what? It's very nice to have, we think; and you would have thought the same if you had not been traveling on such a tight schedule that you had tired yourself so much that you wanted to sleep in the morning.

"You were critical of our recognized breakfast hour because you couldn't get a table to yourself where you could stretch out and read your paper. What a ghastly shame!

"Why, oh why, don't some of you round-the-world travelers travel a little more leisurely and really see places? What can you know of New Zealand when you had but a few days here? Nothing, apparently, judging by the article I am criticizing, for there is nothing of travel interest in it—just a series of moans and groans about lack of this and lack of that."

• **Just spoofing, that's all**—Well, it's too bad this gent (since he's an Englishman I guess I can't call him bloke which is what every guy in Australia and New Zealand is termed) hadn't waited for my whole N.Z. series. Matter of fact I like the country and have said so. But wherever I go I do a fair measure of spoofing. I don't try to be an authority on anything on this page—I just write what happens to this somewhat crazy American as I travel around.

My critic seems to think that my criticizing of customs is in the same league with the direct person-to-person criticism which one runs into "down under." The point I was trying to make is that Aussies and New Zealanders are more frank, curious and outspoken than any other people I know about.

As for that early cup of tea. Sure, I think it's a good idea—if and when you want it. I do consider it somewhat of a jolt, however, to have a maid carrying around a special key which permits her to barge into one's room, which was supposedly locked securely.

But let's hear from the other Englishman who happens to be a retired Air Vice Marshal, R.A.F. Writing from London, he said he is a regular reader of this page and enjoys it.

"I have read your account of your stay at the Waterloo Hotel in Wellington and fairly hooted with laughter. I did a three-year tour in N.Z. during WW II on loan to the RNZAF and, although I have spent a lot of time in the U.S.A., a country I love as much as my own Scotland, I felt exactly as you did over this breakfast business.

"I left Montana in 1915 to go over and join up in the Royal Navy. Even in that service it was an unforgivable crime even to speak at the breakfast table, a meal taken in silence. At my first breakfast I said 'Good morning' to the Commander, which evoked a sharp 'Good morning be damned'.

"But don't confuse N.Z. with the United Kingdom. Here you *will* get a table to yourself, you will get a newspaper and no one will comment on how you use your breakfast spanners. But you *will* have to order the national laxative if you do want a cup of tea when you awake!

"I hope your article will be published in the N.Z. press. A grand country but a bit of light-headed criticism such as yours would do a heap of good and may well help in improving some of the things which put travelers off from the enjoyment of a country which otherwise has much to offer to the tourist.

"I hope you will still keep traveling as your articles are so very enjoyable and informative."

Thank you, sir. And I can think of a great many pleasant breakfasts in the U.K., although I wish it had better coffee. It is true that you can have your own table but there are some exceptions. Last time in London on a one-night stand I had a hard time finding a room, but ended up in one of the large old hotels where breakfast was on a not-very-pleasant mass scale. I didn't mind, but do you know who was one of the most dour, unpleasant table companions it has ever been my displeasure to join? A well-dressed American businessman. He certainly got out on the wrong side of the bed that morning. He was mad at everything and everybody.

This issue winds up my trip "down under." I can recommend traveling to Australia and New Zealand—they are interesting countries and the people are hospitable. For myself, I was treated royally, especially by the airlines. And a special note of thanks and appreciation to New Zealand National Airways Corp., a fine outfit.

I left Auckland on a Tasman Empire Airways DC-6 for Nandi in the Fiji Islands, where I connected with a Qantas Empire Airways Super-G Connie for Honolulu. My seat companion was Iris Hunt, of Hunt's Travel Service in Suva, Fiji Islands, and if you ever require any service in that area, including trips on Fiji Airways, this is the outfit to contact. Iris Hunt is a real authority on the Fijis.

• **From Nandi to Honolulu**—At hot, humid, tropical Nandi, it was raining, which wasn't unusual. Those of you who knew Nandi from World War II should know that there's a hotel, a good lounge and pretty fair dining room, and that Nandi is quite an aerial crossroads these days. After a wait of a few hours, I was off to Honolulu with Qantas, and while I didn't get much sleep, I got a very fine king-size breakfast when morning came. I like the interiors of the Qantas airplanes and the Qantas service is, as I've said before, on a very high level.

Late in the morning I arrived at Honolulu and had super-fast and super-polite service from customs, health and immigration, and was met by Art Lewis, president of Hawaiian Airlines, and his v.p.-sales and service, a very hard-working energetic and imaginative bird by the name of Jack Tobin.

I stayed over one flight in Honolulu to rest up and see friends. I had Room 884 of Tom Kelly's new Reef Hotel at Waikiki and it was superb. I cleaned up and napped and will recall the afternoon there as one of the most pleasant and relaxing I've had anywhere. Those crosswind breezes (it was a corner room) were delightful and the Reef rooms are excellently furnished. That night a wonderful guy known to many in aviation, Andy Cannon, then based with MATS out there, joined the Lewises and Tobins for dinner and I ran into such guys as Ted Gould of American and Ed Adams of Northwest.

All I could get to San Francisco on Qantas was a coach seat. No fault of Qantas, but some of the coach passengers decided to talk all night, so my sleep was quite limited, and anyway I don't squeeze easily into a coach seat, but in a few hours I was in San Francisco and stayed there for a spell and then hopped to Washington in a United DC-7. I had started the trip East to Copenhagen and over the North Pole on SAS. I had been over the top of the world and way "down under," but not around the globe.

THREE MINUTE

An American Aviation and Aviation Daily Staff Report

AIRTRENDS

Watch for upward expansion of recently-established "super-skyways" as airlines introduce civil jets. Rules now limit these positive control airways between 17,000 and 22,000 ft., but they will be raised to ceiling of optimum jet operation as carriers commence operations.

Key to success of Airways Modernization Board has shifted from programming to personnel. Resignation of acting technical director James L. Anast leaves AMB with a top vacancy that cannot be filled too soon. While Anast was permanently designated for No. 2 spot in AMB direction, chairman E. R. Quesada openly expressed no hurry to fill the No. 1 post. Anast's departure to join Lear as a vice president should speed a decision.

Automatic air traffic control may not be so far down the road if the Airways Modernization Board's latest undertaking proves fruitful. AMB is negotiating with Radio Corporation of America for development of an automatic two-way data link system and expects to start testing an experimental model in July, 1959.

Known as AGACS (air-ground-air communications system), the equipment is to be compatible with the ATC data processing and display system being developed for AMB by General Precision Laboratory, Inc.

Idea is that AGACS-equipped aircraft would be electronically queried for flight information, and answers would be transmitted automatically.

The RCA proposal was selected from 14 submitted by various companies.

Look for a decision on Doppler frequency assignments by the end of this month.

Electronics and aircraft manufacturers as well as airlines hope that, before it recesses in August, FCC will vacate the order eliminating use of the 8,500-9,800 mcs. band for the radar navigation aid.

They are not likely to go much further out on a limb developing equipment in the 8,800 mcs. range. However, they fear that, if the order is not vacated now, availability of Doppler will be delayed as much as a year.

Addition of General Precision Laboratory, Inc. to the list of those supporting Aeronautical Radio, Inc. and Air Transport Assn. in opposition to the FCC ruling may help to bring about an early decision. The company blazed the Doppler trail in the U.S. and its technical know-how should lend considerable weight.

ATC facilities modernization program at CAA is moving along in high gear. During last fiscal year, with books not yet closed, CAA obligated more than $140 million for new facilities and their installation. This compares with slightly more than $75 million in fiscal '57 and a little more than $10 million in '56.

By late June, about 224 contracts were still in process. Of 706 awarded during fiscal 1957 and '58 as part of five-year facilities program, 482 were completed.

Outlook for 1959 shows still increasing activity with airways facilities obligations mounting to $175 million.

Increased airways spending is proving new attraction for electronic firms formerly doing 100% military business. Best examples: Topp Industries, Inc., Beverly Hills, Calif. and Texas Instruments, Inc. of Dallas. Topp has become a major supplier of VOR ground stations; Texas Instruments of radar.

Latter's most recent award is a $2,475,-794 contract to supply 54 kits for modernization of existing ASR-1, -2 and -3 airport surveillance radars. Kits will feature an improved moving target indicator, automatic performance monitoring and built-in test equipment. Delivery is scheduled to start December 19 at a rate of eight kits per month.

In addition, the company recently won $5,928,000 contract for CAA for ASR systems to be installed at 19 different sites. Presently, it is producing 16 similar systems as the result of a CAA contract awarded last January.

VORTAC support is promised by the AF. However, it wants the Senate to provide an additional $16.5 million to take care of the DOD's share of the cost rather than force the transfer out of AF appropriations as directed by the House.

THREE-MINUTE NEWS SUMMARY

An American Aviation and Aviation Daily Staff Report

Edited by Eric Bramley

Primary cause of the collision of an Air National Guard T-33 and a Capital Airlines Viscount near Brunswick, Md. on May 20 was inadequate air traffic control procedures, according to a report filed by the Air Force Accident Investigation Board with the Civil Aeronautics Board. Specifically it blamed continuing reliance on "see-and-be seen" procedures over the high density Washington area.

Contributing was the inadequacy of surveillance radar which is now being modified. Other factors which might have contributed, according to the AF were: (1) cockpit visibility restrictions in the Viscount and difficulty in observing from the T-33 at wide angles to starboard and, (2) pilot complacency that IFR provides collision immunity.

Newest entry in competition to supply a much-needed "go-no/go" monitor for jet takeoffs is Doman Helicopters, Inc., Danbury, Conn. Company is marketing Darto (Doman acceleration rate takeoff) system weighing less than 8 lbs. exclusive of computer. It gives pilot a direct-reading go or no-go indication of aircraft's takeoff capability based on computation of runway slope, wheel friction, engine thrust variation and aerodynamic drag.

Darto is Doman's second major diversification project in recent months. Firm has been awarded a $38,544 contract from Airways Modernization Board for its Dalto (Doman approach, landing and takeoff) system for simulation of low weather approach conditions in flight training. Dalto is now in production in anticipation of large-scale airline and military orders.

What pilots want for flying jet transports is revealed by Pan American World Airways. Air Line Pilots Association, in negotiations, made a proposal that PAA claims would result in top seniority captain (flying half day/half night, 85 hours a month) getting $20,000 raise to more than $45,000 a year. Top copilot would jump $14,000 to almost $30,000. PAA has offered 15% differential above DC-7C pay; top captain would get $28,589, copilot $18,035. ALPA also wants displacement of flight engineers by pilots, with PAA standing expense of qualifying pilots for engineers' certificates.

Branching out, Southwest Airmotive Co., Dallas, now is a Cessna distributor along with its distribution of parts and accessories. Company purchased Aircraft Sales Co., with facilities at Ft. Worth and Longview, Tex., as a Cessna dealer outlet. Southwest also maintains a major engine overhaul shop, business flying terminal and service at Dallas.

CAB turned thumbs down on Pan American's request to use Boeing 707 on cargo-mail flights following delivery of the plane and prior to completion of CAA certification tests. But Board left the door open for a later request. Board said it would entertain applications after airlines have had experience under a special civil air regulation that permits them to use jets before final certification for crew training, service tests, and to gather data on fuel management, dispatching, etc. Applications should show that cargo-mail flights would advance safety objectives of this regulation and shouldn't be based solely on economic considerations, CAB said.

Douglas Aircraft earnings have dipped. Donald Douglas, Jr., company president, says 1958 earnings will be less than 1957, that they will be "very low" in 1959 because of the DC-8 transition.

Fifth airline in recent months to specify kerosene as the fuel for its upcoming turbine-powered planes is Eastern Air Lines. Others were American, Pan Am, United and West Coast. EAL signed three-year contracts with seven oil companies covering 527.8 million gallons of kerosene. Companies were Esso Standard, Shell, Sinclair, Cities Service, Gulf, Standard Oil (Ohio) and The Texas Co.

KC-135s can be used to augment AF airlift capability as an alternate to their refueling mission, which could account in part, at least, for the interest in boosting the number of planes on order.

FROM AN ORIGINAL PAINTING FOR CECO BY R. T. HANDVILLE

Contributing to superb performance . . . Boeing's 707 Jetliners powered by Pratt & Whitney Aircraft JT-3 turbojets will be equipped (as will many of the JT-4 applications) with *main fuel pumps* engineered and built by Chandler-Evans. CECO, in addition, is producing *cabin temperature control valves* for a number of the 707s which have been ordered by world-famous air lines.

Products, too, are "known by the company they keep", and CECO is proud to be airborne with an array of important missiles as well as with many of the latest and finest military and commercial aircraft.

CHANDLER-EVANS • WEST HARTFORD 1, CONNECTICUT

Interesting, informative literature on many CECO products is yours for the asking. Please address your request to Department 48.

Circle No. 3 on Reader Service Card.

CECO
SYSTEMS
CONTROLS

MILESTONES IN AVIATION

Across the nation in 49 days

NEW YORK TO CALIFORNIA

THE BIG MAN, grinning around an ever present cigar, stepped quickly out of his battered Wright E-X and was immediately mobbed by a wildly cheering throng. The date: November 5, 1911. The event: Completion of the first flight across the United States. The man: Calbraith P. Rodgers.

This epic air journey, ending in Pasadena, Calif., 49 days after Rodgers took off from New York, was replete with mishaps that would have withered the courage of a less dedicated man. But this grandson of Commodore Perry, who opened the ports of Japan, was not daunted by hanging up in treetops on take-offs and landings in pastures amid uncooperative milk cows.

Rodgers missed by 19 days a $50,000 prize offered to the first man to fly from New York to California in 30 days. But as Rodgers put it: "Never mind about the money. I made the first flight across the country, didn't I?"

● A pioneer in research and development of aviation fuels, Phillips Petroleum Company is, today, a foremost supplier of high octane gasoline for commercial, private and military aircraft. In step with the future, Phillips is a leading producer of *super-performance* Jet Fuels for the latest designs in turbo-props and jets. And Phillips research continues to lead the way for development of fuels for the aircraft of tomorrow.

PHILLIPS 66

AVIATION DIVISION • PHILLIPS PETROLEUM COMPANY • BARTLESVILLE, OKLAHOMA